EXHIBIT 10

In the Matter Of:

K.C., ET AL

-v-

INDIVIDUAL MEMBERS OF MEDICAL LICENSING BOARD OF INDIANA, ET AL

Daniel Shumer, M.D.

May 16, 2023

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

K.C., et al., Plaintiffs, -v- THE INDIVIDUAL MEMBERS OF THE MEDICAL LICENSING BOARD OF INDIANA, in their official capacities, et al., Defendants.

CASE NO. 1:23-cv-00595-JPH-KMB

The deposition upon oral examination of DANIEL SHUMER, M.D., a witness produced by means of videoconference and sworn before me, Melody M. Goodrich, CM, Notary Public in and for the County of St. Joseph, State of Indiana, taken on behalf of the Defendants, with the witness being located in Ann Arbor, Michigan, and all other participants appearing via videoconference, on Tuesday, May 16, 2023, at 9:02 a.m., pursuant to the Federal Rules of Civil Procedure.

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COURT REPORTER: My name is Melody Goodrich, an associate of Stewart Richardson & Associates, 1400 East Angela Boulevard, Suite 258, South Bend, Indiana. Today's date is Tuesday, May 16, 2023. The time is 9:02 a.m. This deposition is being held with all parties appearing remotely. The deponent is Daniel Shumer, M.D.

Will counsel please identify themselves and any persons present with you for the record, and please stipulate to the swearing of the witness.

MR. SELDIN: Harper Seldin, ACLU, defending Daniel Shumer. I'm here with him in Ann Arbor, Michigan, and stipulated.

MR. FALK: And Ken Falk, also for the plaintiffs from the ACLU of Indiana, along with Gavin Rose, participating remotely.

MR. STRANGIO: And Chase Strangio, also from the ACLU.

MR. FALK: Oh, sorry, Chase.

MR. STRANGIO: No, no worries. Participating remotely with the plaintiffs.

MR. FISHER: Okay. Tom Fisher of the Attorney General's Office representing the defendants. I'm here with -- in the room with me -- Brad Davis and John Vastag, V-A-S-T-A-G,

who are law clerks, and then Razi Lane who's also appearing by video.

DANIEL SHUMER, M.D.,

having been first duly sworn or affirmed to tell the truth, the whole truth, and nothing but the truth, was examined and testified as follows:

EXAMINATION

BY MR. FISHER:

Q Good morning, Dr. Shumer.

A Good morning.

Q Can you hear me okay?

A I can. Thank you.

Q Good.

A Can you hear me?

Q Yes. Thank you.

So my name is Tom Fisher, as you heard earlier. I'm a Deputy Attorney General and the Solicitor General of Indiana, and I'm representing the defendants in this case, the state -- various state officials who have some connection to Senate Enrolled Act 480 -- 480, right? -- 480, yeah. And so I'll be taking your deposition today.

Have you had your deposition taken before?

A I have.

Q Okay. So you have some familiarity with how this works. I'm going to ask questions. You need to give truthful answers.

Is there any reason you can't understand my questions today?

A There's not.

Q Any reason you can't give full and complete testimony?

A No.

Q And you have Mr. Seldin in the room with you; is that correct?

A That's correct.

Q Do you have any documents open in front of you?

A I have my final declaration.

Q Anything else?

A No.

Q Okay. All right.

MR. SELDIN: And just for the record, the document he has in front of him is the as-filed copy of his declaration that was filed at ECF-262. He just has a clean copy from me.

MR. FISHER: Thank you. All right.

BY MR. FISHER:

Q All right. Let's pull up Exhibit 1, which is the deposition notice.

(Shumer Exhibit 1 marked.)

Q All right. Dr. Shumer, do you -- have you seen this document before?

A I'm not sure that I have, no.

Q Okay. Well, just very briefly, this is the notice of deposition directed to -- to you or to take your deposition as a witness in this case.

I just want -- if you could just read it over with -- for me, and when you're done, let me know.

A Okay.

Q Is there anything in this notice that you don't understand?

A No.

Q So you provided an expert report in this Indiana case, and that's why we're here to depose you today; is that correct?

A That's right.

Q Okay. Let's go ahead and pull up Exhibit 2, which is the complaint.

(Shumer Exhibit 2 marked.)

Q All right. Dr. Shumer, have you seen this document before?

A I'm not sure if I have.

Q Okay. Could --

MR. FISHER: Shawn, go ahead and scroll down just a little bit more. Let's see if he can see the title there.

Okay.

BY MR. FISHER:

Q Does this help you out at all? Have you seen this before?

A I think so.

Q You think so. Okay.

But you're not sure if you've read the complaint before?

A Yes, I have read this complaint.

Q Okay. Good. So my purpose for putting it in front of you is only so that we can all agree that we're talking about this case. This is the subject of the -- of your testimony and of your expert report; is that accurate?

A That's right.

Q Okay. All right. Let's go ahead and bring up Exhibit 3, which is Senate Enrolled Act 480.

(Shumer Exhibit 3 marked.)

Q Doctor, have you seen this document before?

A Yes.

Q And just describe for me what it is, to your understanding.

A This is an act passed in the State of Indiana regarding gender-affirming care.

Q Okay. And this is the subject of the lawsuit that you're testifying about?

A Correct.

Q All right. Let's go ahead and bring up Exhibit 4, which is Dr. Shumer's expert report -- or expert declaration.

(Shumer Exhibit 4 marked.)

Q Okay. Doctor, do you recognize this document?

A Yes.

Q And just -- if you would, just recite for the record what it is, please.

A This is my expert declaration regarding the law previously discussed.

Q And it carries the caption of this case, and it was submitted in this case, correct?

A Correct.

Q Okay. Great. Okay. So I just want to start a little bit with some background, Doctor. Just tell us, if you would, please, about your education and training post-high school.

A Sure. So I did my undergraduate at Northwestern University and continued there at the Feinberg School of Medicine at Northwestern University.

Upon graduating medical school, I was a pediatric resident at the University of Vermont, Vermont Children's Hospital. Afterwards, I received my pediatric endocrinology fellowship at Boston Children's Hospital and concurrent with that a master's of public health at the T.H. Chan School of Public Health at Harvard University.

Q Any board certifications?

A Yeah. I'm board certified in pediatrics and pediatric endocrinology.

Q And tell us about your work history following medical school.

A So upon finishing my fellowship at Boston Children's Hospital, I was -- I began employment at Michigan Medicine, the University of Michigan, in 2015, as a pediatric endocrinologist, and I've worked there since.

Q So do you have a clinical practice?

A Yes. So it -- at the University of Michigan, I'm what's called an associate professor, which is just sort of an academic title. But within that I see patients as a clinician, and I have administrative roles and education roles.

Q Okay. What -- tell us about your clinical practice. Who do you see in your clinical

practice?

A Yeah. So as a pediatric endocrinologist, I take care of kids with all sorts of endocrine problems, which has to do with hormones. So kids with Type 1 diabetes, thyroid problems, growth problems.

But an area of focus in my career has been working with transgender youth.

Q But your practice is more general than just transgender youth?

A Right. So in a week, I have one half-day clinic of diabetes; I have one half day of endocrine; I have two half days of gender; and then I have a virtual day, which is a mix of everything.

Q Okay. Do you have any areas of research in writing?

A I've published several different topics, but I would say the majority recently of my, you know, academic writing has involved gender identity and the management of gender dysphoria in adolescents.

Q How long have you been focusing on that?

A Since my pediatric endocrine fellowship in Boston, so probably 2012 till the present.

Q So from 2012 to the present, your principal area

of research and writing has been gender dysphoria and transgender youth?

A That's correct.

Q Okay. Any subjects that were a focus of research in writing before that?

A No. Before that I was just in training as a medical student and resident. So my sort of academic writing career started in fellowship.

Q Okay. So any other subjects on which you've published papers?

A Yeah, there's several general endocrine papers that I've published regarding various disorders, subcutaneous fat necrosis, hypothyroidism. But the bulk of the writing has focused on gender-related topics, gender identity-related topics.

Q Okay. So let's turn to your declaration. Again, this is Exhibit 4. One thing I forgot to do is have you verify your signature on page 23. So let's do that.

There it is.

Doctor, is that your signature on that page?

A It is.

Q So paragraph 7 of your declaration, it says -- let's go ahead and get to paragraph 7 there on

page 2.

Okay. So it says, "A major focus of my clinical, teaching, and research work pertains to the assessment and medical management of transgender adolescents."

Can you describe what medical management of transgender adolescents involves, please.

A Sorry. Your audio cut out for a second. Can you repeat that.

Q Oh. I would like for you to describe what the medical management of transgender adolescents involves.

A Sure. So I think that the first thing I would say is that everyone, of course, has a gender identity, that sometimes that gender identity aligns with the sex assigned at birth, and sometimes it doesn't.

When it doesn't, a person may then be described as being transgender. A transgender person may have distress associated with the discordance between their gender identity and sex assigned at birth and may meet criteria for a diagnosis called gender dysphoria.

There's specific management options for gender dysphoria that I'm assuming we're going to

be talking more about today.

So when I'm saying the medical management of transgender adolescents, I'm referring to the management of adolescents with gender dysphoria.

Q Does that differ from the management of children with gender dysphoria?

A Yes. So if maybe you could clarify what you mean by "children."

Q Preadolescents.

A Correct. Yeah. So in preadolescents, a person that is transgender or even with gender dysphoria wouldn't -- wouldn't require or be prescribed medications to treat gender dysphoria specifically.

Q Do you handle preadolescents as well as adolescents?

A Well, as a pediatric endocrinologist, I rarely see preadolescents with gender dysphoria because they wouldn't require medical intervention. But, you know, sometimes if a patient that's a preadolescent is referred to the gender clinic here at the University of Michigan after their sort of formal assessment, the family may want to meet with me to just discuss -- discuss topics around gender dysphoria.

So I sometimes see preadolescents but, of course, wouldn't be prescribing medications to them for gender dysphoria.

Q Do you ever recommend to them any nonmedical treatments or therapies?

MR. SELDIN: Object to form.

A So when I see preadolescents and their family, oftentimes I'm making sure that they're connected to resources in their area. If there's supports that can be put in place to help the child live a happy, healthy childhood, then I can help connect with -- I can help the family connect with those resources. But a lot of that, to be honest, is work being done by other members of our team, like our social workers.

Q Do you ever recommend psychotherapy?

A Certainly if a young person is struggling with anxiety or depression, that's -- connecting with a good mental health professional is always a good idea. So I would certainly recommend psychotherapy in that situation.

Q Well, how often does that happen, would you say, with preadolescents?

A I'm not sure. I think it's pretty variable.

Q Okay. So -- and then as far as treating,

managing transgender adolescents, how does that differ from managing transgender adults in your practice?

MR. SELDIN: Object to form.

A Well, I think adolescence is a -- it's a relatively long age range. So I'd say in early adolescence, as a pediatric endocrinologist, I'm thinking a lot about puberty, how puberty is starting, the stage at which a child's puberty is at.

And so as you know, the WPATH Standards of Care and the Endocrine Society Clinical Practice Guidelines outline medical options for adolescents in earlier stages of puberty. In later adolescence, management options differ.

So I think that management in adolescents oftentimes depends on the age and stage of the patient that we're talking about.

Does that answer your question?

Q Have you ever treated adults -- transgender adults?

A Yes. So as a pediatric endocrinologist, in our pediatric gender clinic, all of our new patients are under 18, but that -- I oftentimes treat patients as they, you know, turn 18 and then, you

know, enter young adulthood before sending them off to adult care. So I do have several young adults in my practice.

Q And I guess I'm wondering just from the standpoint of thinking about how your patients -- what their -- consider their options, understand what their options are. Does that process of discussion with the patient change between when they're, say, 15 or 16 and when they're maybe 20?

MR. SELDIN: Object to form.

A Well, I think every patient is a unique individual. Right? So when we're seeing any patient, we're taking a history, doing a physical exam. You know, prior to even me seeing them, I already know a lot about the patient because they've undergone a biopsychosocial assessment from other members of our team.

And so each patient, you know, is assessed individually and then options for if they -- if they have any diagnosis at all, then that diagnosis is reviewed with them and options are discussed that may be different depending on which patient it is, and, of course, different ages would have different considerations.

Q What gender dysphoria treatments does your clinic offer?

A So gender dysphoria is -- management is pretty well defined by, for example, the WPATH Standards of Care and the Endocrine Society Clinical Practice Guidelines. The use of -- in terms of actual medical interventions, the use of GnRH agonists and hormonal interventions may be appropriate for patients with gender dysphoria that we see. Those are certainly things that are offered if a patient would benefit from them.

We have also mental health team members who can, you know, provide support and other referrals for any other supportive care that a patient may need.

Q You mentioned GnRH agonists. Are those sometimes called puberty blockers?

A They are.

Q What about surgeries for your patients? Do you offer those?

A No, not in the child and adolescent gender clinic here at Michigan Medicine, we don't.

Q Do you refer adolescents for surgeries elsewhere?

MR. SELDIN: Object to form.

A We do.

Q And where do you refer them?

A So primarily we're talking about chest surgery when we're referring to adolescents, and there's several options in southeast Michigan that the patients can be referred to.

Q What do you mean by "chest surgery"?

A I would say the majority of patients that I've seen that have had a gender-affirming surgery, that surgery has been masculinizing chest surgery, also sometimes referred to as top surgery.

Q What does that mean?

A It means a surgical intervention to help a person to have a more masculine-appearing chest by removing breasts.

Q Is that different from a double mastectomy?

MR. SELDIN: Object to form.

A I would say that the double mastectomy is another term for the same thing that we're talking about. I use the term "masculinizing chest surgery" because I think that the goal oftentimes of a double mastectomy, for example, for a cisgender woman is to, for example, remove breast cancer.

Whereas in a masculinizing chest surgery, we're similarly removing breast tissue, but the -- the end goal is to create a

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masculinization of the chest appearance.
Q Why don't you do the surgeries there at your -- at the University of Michigan?
MR. SELDIN: Object to form.
A We do do surgeries at the University of Michigan, just not in the child and adolescent gender clinic.
Q Oh, I see. So when you refer your patients for, for example, top surgery, do you sometimes refer them within your medical system to surgeons?
A Yes.
Q Okay. So surgeons within the University of Michigan medical system sometimes do perform top surgery on gender dysphoric adolescents?
MR. SELDIN: Object to form.
A Yes.
Q All right. So you started to get into this a little bit earlier, but I think we need to kind of fall back and talk about a couple of basic ideas.
So from your perspective, what is "sex"?
MR. SELDIN: Object to form.
A "Sex" is a way that we can try to classify people into groups, male and female, that encompasses a variety of different factors.

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Q Okay. What are those factors?
A Well, I think that the first thing to know is that there's a lot of different -- it would be nice to sort of say sex is easily separated, male, female, here, here. But when you think of -- when you look at the science, there's a lot going on that can contribute to understanding of sex, including things like someone's chromosomes, someone's anatomy, hormones, gender identity.
Q So is sex something that can be determined solely from objective observation of evidence?
MR. SELDIN: Object to form.
A So a lot of those components can be, of course. Right? So you can measure someone's chromosomes under a microscope. There's, you know, visual appearance of anatomy that can be ascertained. Gender identity, that element of sex doesn't have a discrete test in a similar way like chromosomes. Hormones you can measure in a lab.
Q Well, if a person's anatomy, chromosomes, hormones all say that that person is male, but the person says my gender identity is female, what sex is that person?
MR. SELDIN: Object to form.
A Well, I would say that that person has an

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anatomic sex of male, chromosomal sex of male, hormonal sex of male, and a gender identity of female.
If that person, you know -- I would need to know more about this hypothetical person, I suppose, how they -- how that gender identity -- so I guess to answer your question, that person I would consider female for the purposes of interacting with them because of their gender identity.
Q What about for other purposes?
MR. SELDIN: Object to form.
A A person whose -- a person whose gender identity is female -- I guess I would ask why -- why would I be trying to -- what would be -- what would I be using the determination of sex for? Right? So the --
Q I didn't mean to cut you off.
A Oh, that's it. Go ahead.
Q I was thinking clinically.
A Yeah.
Q You know, if a person has health issues, wouldn't you -- is gender identity what you're going to go by?
MR. SELDIN: Object to form.

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A Yeah. So I think it really depends. Right? So if someone has a gender identity of -- as female -- right? -- but they have an anatomic problem with their prostate, it's important to know that they have a prostate because that part is -- part of their body is what we're focusing our medical attention on.
So in the end, I think that, you know, we really have to put it in context, that the patient is a person with a lot of different, you know, relevant elements.
So in that situation, you know, I would be treating that woman's prostate problem. She has a prostate that's part of her anatomy.
I'm not sure if that answers your question.
Q In part. I guess I'm still wondering what the sex of that person is.
MR. SELDIN: Object to form.
A Female would be the answer.
Q So is it fair to say, then, that what matters in determining sex is the person's gender identity?
A I guess I would say matter in what way. Right? So if I'm interacting with that person in -- in a social context, of course that person would be a female. If she needs prostate surgery, that's a

surgery on an anatomic male part. That anatomic part might require surgery.

So, you know, putting your -- you need to put the question in context for it to matter what sex that person is.

Q I see. So a person can be one sex for some purposes but a different sex for other purposes?

MR. SELDIN: Object to form.

A I would not -- I would not agree with that statement, no.

Q Okay. Well, I'm trying -- I'm just trying to understand how you think about sex and sort of what it's used for. I thought you said that a person's sex depends on the context in which it's used.

MR. SELDIN: Object to form. Misstates testimony.

A A person's sex is more complicated than a black or white male or female, is what I'm trying to convey.

So that person has, you know -- that person has different elements of their sex and so, you know, the -- so that the -- you know, the question of what sex is that person, you know, is more complicated than a simple answer.

Even though it might be convenient to try to separate people into these boxes, male and female, when we're talking about what is the sex of a person, that's a more complicated, unfortunately, biologic question.

Q I guess I thought a minute ago you said that in my hypothetical the person -- because the person was -- the gender identity was female, that that person -- person's sex was female.

A So if -- I guess I need -- I need to understand what the purpose of classifying that person's sex is in your hypothetical because --

Q Okay.

A -- I think I've explained my definition of sex sufficiently to understand that my definition of sex is that it's made up of many different components.

And I said that in interacting with that person with the gender identity of female, if you asked, "What is the sex of that person," as a blanket statement I would say female. But if you want to get into the nitty-gritty of all of the elements of that person's sex, then we have to go back to all of those elements that we've been talking about.

Q Okay. Are you aware of any biological tests, such as an imaging study or a hormone level, that can reliably diagnose gender dysphoria?

MR. SELDIN: Object to form.

A I'm not.

Q Let's take a look at paragraph 28 of your declaration. So the first line of -- are you with me on paragraph 28, Doctor?

A Yep.

Q First line, it says, "A person's understanding of their gender identity may evolve over time in the natural course of their life." And I don't mean to take it out of context. I just don't want to read the rest of the sentence. But if you think it's relevant, you can correct me.

I just want to get at the question of is it -- a person's understanding of their gender identity and a person's gender identity, are those the same thing, or can those be different?

MR. SELDIN: Object to form.

A I think they're different. I think that a person's understanding of their gender identity may evolve over time, but the gender identity in my -- in my clinical experience does not seem to change over time.

Q How do you discern someone's gender identity apart from that person's understanding of their gender identity?

MR. SELDIN: Object to form.

A Their understanding of their gender identity is a really important part of understanding their gender identity. So, you know, I think that, of course, gender identity is -- well, I would describe gender identity as one's deeply-felt internal sense of one's self as male, female, boy, girl, man, woman, or maybe somewhere in between or some other gender identity.

And to understand that gender identity, it involves talking to the person and helping to understand their understanding of that gender identity.

Q Have you ever met someone whose gender identity in your estimation differed from that person's understanding of their own gender identity?

MR. SELDIN: Object to form.

A Of course. So if you're thinking about, you know, young children -- right? -- young children don't have a self-concept of gender identity. So, you know, their understanding of their gender identity, you know, before they're able to talk

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is unknowable. That someone may be -- I think that in -- for all of us in childhood, we're going through a process of understanding ourselves in all sorts of different ways, from our likes and dislikes, our sexual orientation, our gender identity, and as -- as we continue to grow and interact with the world, the evolution of understanding of gender identity evolves as well.

And so -- so the -- I think that's the answer to the question.

Q Well, I probably just didn't get it across quite clearly enough. But let's go back to those young children.

When you were giving me your answer and talking about young children, how young were you thinking of?

A Oh, I don't know. I think that, for example, prepubertal children, you know, are exploring the world around them and understanding their lives in all sorts of different ways, including their gender identity.

Q Okay. And my question was, simply: Have you ever encountered a person where you discerned their gender identity to be something other than

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what that person understood their own gender identity to be?

MR. SELDIN: Object to form.

A I don't know.

Q You don't know. So how do you know that a person's understanding of gender identity is different from their actual -- or could be different from their actual gender identity?

MR. SELDIN: Object to form.

A So, for example, there may be a patient that I'm seeing who is an adolescent, and they are -- they are coming to the gender clinic for evaluation of potential management. In their assessment, they describe understanding that they're not sure what their gender identity is, but something feels different, that they don't -- let's say this person is assigned female at birth, that they don't feel so much like a girl, but they're continuing to work to understand what that feeling is all about.

At the end of our interaction, the plan might be to go -- you know, continue to explore that gender identity with their -- with their family, with perhaps a mental health professional. And then subsequently I might see

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that same person 6 months, 12 months later, and they say -- they might say, you know, the interval time has been so helpful in my exploration of gender identity and now it's more clear to me that my gender identity is -- that I identify as a boy.

And so that would be a person who has a male gender identity, and their evolution of understanding of their gender identity has changed over time.

Q Okay. But in that initial visit where there was some uncertainty, would you know at that point what their gender identity was?

MR. SELDIN: Object to form.

A I would not.

Q And then later when that person comes back and says, "Okay, I identify now as a boy," would you, apart from what they've told you that they understand about their gender identity, have any evidence for what their gender identity is?

MR. SELDIN: Object to form.

A Well, as a pediatric endocrinologist, I -- I feel so fortunate that I get to work with amazing team members, like mental health professionals, that can help understand this process with patients,

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that we do also have tools at our disposal. There's, for example, the clinical diagnosis of gender dysphoria. Because, of course, a person who has a difference in gender identity but doesn't have any distress associated with that may not need to see me at all.

But someone who has, you know, clinical gender dysphoria and -- and that person -- and that person has a gender identity that is different from the sex assigned at birth, that would be a tool to help understand that person's gender identify and how that's affecting them.

Q What would be a tool?

A The assessment and -- the assessment by the mental health professional that -- that is seeing them -- sorry.

Can you ask the initial question again? I think I lost myself there.

Q Yeah. That's okay. I was just wondering when the person comes back -- I mean, going back to your hypothetical. The person comes in and is uncertain, and then you suggest some ways to consider it for a while. And then the person comes back six months later and says, "Okay, I'm more certain now that I was born with, you know,

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a female body, but I identify now as a boy."

And I'm asking apart from that person's communication of their understanding of their gender identity, how would you know what their gender identity is?

MR. SELDIN: Object to form.

A Well, I think a lot of it does have to do with that person's understanding of their gender identity, and, you know, this is -- this is what mental health professionals are trained to do, to work with folks, partner with patients and families, to help understand these really challenging concepts.

There is no test -- there's no blood test. There's no X-ray. But the work of highly-qualified mental health professionals helps to inform the rest of the medical team whether someone's -- whether a person that we're seeing may benefit from intervention for gender dysphoria.

Q What is the error rate for determining if someone is transgender?

MR. SELDIN: Object to form.

A Well, I've never really thought of it that way. You know, I think that what's more clinically

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relevant is, you know, the -- the treatment of gender dysphoria -- right? -- so that if someone has -- has a diagnosis of gender dysphoria and may benefit from treatment, then the likelihood that that person's gender identity persists across time is extremely high.

Q Okay. But is there an error rate of diagnosing gender dysphoria?

MR. SELDIN: Object to form.

A In my clinical experience, the patients that I've seen with a diagnosis of gender dysphoria, you know, has had -- have had -- for example, I haven't had a patient that I've treated with gender dysphoria that then comes back several years later and says, "Guess what? My gender identity is -- I was completely wrong. I'm cisgender."

So I have not had that experience, no.

Q Well, but you're in this case testifying as an expert, right? You're not just testifying based on your clinical experience. That was my understanding at least. Is that correct?

MR. SELDIN: Object to form.

A Yes, I'm testifying as an expert.

Q So according to the literature and all that

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you're aware of, what is the error rate for diagnosing gender dysphoria?

MR. SELDIN: Object to form.

A I certainly have -- there's certainly people out there that have -- that describe that at one point they thought they were transgender, received treatment, and now identify as cisgender. The rate of that happening seems to be less than 1 percent.

Q What's your basis for that?

A So I think that there's -- the statement that the rate of someone that is treated for gender dysphoria all of a sudden identifying as cisgender being extremely low comes from lots of difference sources. Right?

So there's -- there's some, for example, longitudinal studies of treatment of gender dysphoria. There are retrospective studies. There's, you know, the -- I think the -- the way to quantify what you're asking is challenging -- right? -- because you can't capture everyone that has ever identified as transgender and then compared them later on.

What you can come closer to doing, that is people that have received medical care. Right?

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And so in review of cases of people with gender dysphoria that have received medical care, numbers of people that identify as cisgender subsequently, is low.

Q Well, I guess I'm wondering, to have -- if you are designing a study to capture the error rate of diagnosing gender dysphoria, what would be necessary to have a reliable result? How would you structure that study?

MR. SELDIN: Object to form.

A So let me back up for a second because, you know, the diagnosis of gender dysphoria -- there's a specific definition of gender dysphoria. Right?

So if a person has gender dysphoria at any one point in time, then that person is meeting specific criteria. Right? So that a person with gender dysphoria, for example, has a gender identity that's different from the sex assigned at birth. They meet 206 of the other criteria. It's affecting them clinically in some -- it's affecting them negatively in other aspects of their life. So if a person has gender dysphoria, by definition they meet that definition. They meet those criteria.

So at that point in time, there's no error

rate. That person has gender dysphoria. So you're asking a different question.

Q Well, no. I think let's go there. So is it impossible to misdiagnose gender dysphoria in your view?

MR. SELDIN: Object to form.

A Just like all diagnoses in the DSM, the diagnosis is based on a clinical interview. So, for example, if a -- if you ask a patient a question and they give you a false answer, then you may diagnose them with gender dysphoria because they are not being truthful. But if a person is not able to participate in the interview, then you would have a harder time diagnosing gender dysphoria.

You know, I'm speaking as a pediatric endocrinologist that doesn't make a diagnosis of gender dysphoria, of course, but -- but just like the diagnosis of depression or schizophrenia or anxiety, all of these have clinical criteria, and so someone is diagnosed based on meeting those criteria.

Q Well, I guess when using a diagnostic tool in trying to determine whether it's a useful diagnostic tool, as a scientist is it important

to know what the error rate of that tool is?

MR. SELDIN: Object to form.

A Well, gender dysphoria is defined as the -- someone meets the diagnosis of gender dysphoria only if they have the criteria outlined in the DSM. So I'm not -- I guess I'm not understanding your question.

Q I guess I'm wondering how you know that that test gets it right every time.

MR. SELDIN: Object to form.

A Okay. I think I understand. So I think maybe -- maybe implicit in your question is, well, what do we do with the diagnosis of gender dysphoria. Right? So if someone meets criteria for gender dysphoria, what does that mean and what does that imply for the future?

If a person meets criteria for gender dysphoria, for example, and they -- well, okay. Let me back up for a second.

We use gender -- the diagnosis of gender dysphoria to make medical decisions. Right? So a person that does not meet the diagnosis of gender dysphoria wouldn't require intervention. A person that does meet the criteria for gender dysphoria, I would want to know how does that

affect them. Is that something that is making it harder for them to accomplish tasks, like going to school or getting a job or leading a happy, healthy, productive life?

As a whole, we understand that people with gender dysphoria may benefit from medical interventions -- right? -- such as gender-affirming hormones, for example. So if -- if we then take data from the use of gender-affirming hormones to treat gender dysphoria and we see improvement or positive impact on the gender dysphoria, then that helps to validate that the criteria used to diagnose gender dysphoria is helpful.

Q So you don't really know until you treat the child whether your diagnosis was correct?

MR. SELDIN: Object to form.

A No, that's not what I said.

I said that because of the body of evidence in the -- regarding the positive effects of treatment of gender dysphoria, we understand that -- that the use of that diagnosis can be helpful in making management decisions.

Q Can be helpful. Are there times when it's not helpful?

MR. SELDIN: Object to form.

A I don't -- I don't really think I can -- I'm not really sure I understand.

Q Well, you said "can be helpful." And I'm wondering -- okay. I'm still going back to my question. Is it always helpful? Is it an unassailable diagnostic tool?

MR. SELDIN: Object to form.

A Well, I certainly think that in treating transgender adolescents, the -- whether or not they meet criteria for gender dysphoria is an extremely helpful thing to know.

Q Is it unassailable?

MR. SELDIN: Object to form.

A Can you define that.

Q Is it always 100 percent right?

MR. SELDIN: Object to form.

A I don't think anything is 100 percent right in any aspect of medicine, but I think that the confidence that I have in, for example, the assessment that -- members of the multidisciplinary team that I work with I find to be extremely helpful in having really challenging conversations with patients and families about what the medical options might be.

Q So not always 100 percent right. What is the error rate?

MR. SELDIN: Object to form.

A I think this is too abstract to answer in that way. So I think, you know, if you could, be more specific in, you know, a specific situation.

Q Doctor, all I'm asking is if you know if there is an error rate for diagnosing gender dysphoria.

MR. SELDIN: Object to form. Asked and answered.

A I don't have more -- a more precise answer or number than I've already shared with you.

Q And what number is that?

MR. SELDIN: Object to form.

A I don't know what the error rate of diagnosis of gender dysphoria is. What I do know is that patients that have received -- that receive a diagnosis of gender dysphoria and are treated with gender-affirming care, I believe the error rate or the rate of people that later on in the future say, "Turns out I'm cisgender and I" -- "Turns out I'm cisgender," is less than 1 percent.

MR. SELDIN: Tom -- Mr. Fisher, is now a good time for a little mid-morning break or --

MR. FISHER: Yeah. Sure. That's fine. Let's go ahead and take a break.

(Recess taken from 9:57 a.m. to 10:02 a.m.)

BY MR. FISHER:

Q Doctor, I think you said that there are some who are transgender that do not experience gender dysphoria; is that accurate?

A I would agree.

Q So let's start with the preadolescents. About how many preadolescents do you think -- or is there evidence showing that are transgender but not gender dysphoric?

MR. SELDIN: Object to form.

A I don't think I can give you a number. I think what I would say is that gender identity exploration is a normal function of childhood so that -- you know, in childhood we're always putting on different hats and exploring the world around us and how we interact with that world.

So, you know, I think that the -- for example, if a -- if a -- someone assigned male at birth is experimenting with wearing different types of clothes or different types of play, that doesn't necessarily mean that they have a difference in gender identity, for example. They

may -- if a child has a difference in gender identity, they may or may not have any distress associated with that.

But the percentage of young people who are experiencing different degrees of gender identity difference I don't know.

Q Let's just move into the range of adolescents. Maybe let's take somebody -- the range of kids from beginning of Tanner Stage 2 up through, I guess, 15. Is that a useful range -- age range in your mind?

MR. SELDIN: Object to form.

A Sure.

Q And I'm wondering, within that age range, do you have a -- is there any data that shows or do you have an estimate of percentage of transgenders who do not experience gender dysphoria?

MR. SELDIN: Object to form.

A So there are some efforts to understand the number of people that identify as transgender, for example, in the United States today, and that number seems to be somewhere below 1 percent and above .5 percent.

Q Okay.

A And then the number of people then presenting to

clinical care for gender dysphoria is much lower than that -- than that figure.

Q What are your sources for those numbers?

A Let me think. So I think that there's been -- there's a national survey in 2015 that was aiming to understand the prevalence of gender identity difference in the U.S. I think that there's some -- some -- an effort to quantify the percentage --

Q Doctor, I'm sorry. You're breaking up. We're having a hard time getting you.

A Sorry. Is that better?

Q Yes. I don't know where the problem was, but you were starting to talk about what -- I was asking what studies supported the numbers you were mentioning, and so if we could just start there.

A Yeah. So the things that come to my mind are, I think, a 2015 national transgender survey. I believe there's been some work done in Minnesota, if I'm not mistaken, trying to quantify the percentage of young people that are identifying as transgender, and so that's where I'm pulling that number, somewhere between .5 and 1 percent, from.

Q Okay. That 2015 survey, who was surveyed?

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A Now I'm just trying to remember if that was the one that came up -- that did offer that percentage. But there is a 2015 survey of -- I think it's called the National Transgender Survey, I think, published by the Williams Institute, which was surveying people from across the U.S. and territories to learn more about the health and well-being of transgender Americans.

Q How was that survey conducted?

A If I recall, there was a recruitment strategy to try to identify a diverse sampling of transgender people from all 50 states and different territories, recruiting from medical clinics, from snowball sampling, from online advertisements, to try to identify more people from different parts of the country.

Q And how was it conducted?

A Surveys.

Q No. But, I mean, was it mail? Telephone? What was it?

A If I'm not mistaken, I think majority online, but there may have been some mail. I'm not a hundred percent on that.

Q Are you familiar with any criticisms of that survey?

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MR. SELDIN: Object to form.

A Not specifically.

Q Okay. When, Doctor, in your understanding was the first teen gender clinic opened in the United States?

MR. SELDIN: Object to form.

A I want to say in the early 2000s.

Q How many teens were diagnosed with gender dysphoria from 2000 to 2010?

MR. SELDIN: Object to form.

A I don't know the answer to that.

Q How about the decade -- or 12 years, 2011 to 2023?

MR. SELDIN: Object to form.

A I don't know the number of people diagnosed.

Q Do you have any sense of the volume dynamic of that diagnosis over that time?

MR. SELDIN: Object to form.

A Sorry. Can you --

Q I'm wondering if you have a sense of whether the volume of teen diagnosis with gender dysphoria has increased in those two decades.

MR. SELDIN: Object to form.

A There has been more -- more adolescents diagnosed with gender dysphoria in the last decade, specifically as there's been more access to health intervention.

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Q Sorry.

A I can just barely see the top of your head.

Q Oh, I'm so sorry.

Is that better?

A Yes. Thank you.

Q Okay. I can't see myself so I didn't really know.

A You're like (indicating).

MR. SELDIN: Don't deprive us of the view of that sharp tie, Mr. Fisher.

BY MR. FISHER:

Q I'm sorry. Were you finished with your answer, Doctor?

A I think so, yes.

Q Okay. So back to paragraph 28 of your declaration, if you could pull that up. I'm sorry. This is 4, right? Exhibit 4.

And you'll recall earlier I read the first clause of that first sentence, and now I'm going to switch focus to the second clause, which says, "Attempts to force transgender people to align their gender identity with their birth sex (sometimes descried as 'conversion therapy') have been found to be both harmful and ineffective."

Do you see that?

A I do. And I do believe that word was supposed to be "described." So sorry about that typo.

Q No. That's okay. I was actually going to try to fix it for you, but then I couldn't figure out if it was "decried" or "described." So I thought I'd let you do it. Okay. Thank you.

And then you cite -- later in the paragraph you cite Turban 2020a, right? Do I have that -- right. Turban 2020a. Campbell 2002, but I think that may be actually 2022.

A Okay.

Q And in Fish, you say 2022, but might actually be 2020. I got those dates just, I think, from your bibliography.

Anyway, you're with me, though? Yes?

A I'm with you.

Q Okay. So let's start with that Turban study.

So this is Exhibit 5. Let's go ahead and pull that up.

(Shumer Exhibit 5 marked.)

MR. FISHER: I'm sorry. Turban -- JAMA Psychiatry, Association Between Recalled Exposure. There we go.

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BY MR. FISHER:

Q So, Doctor, you see what's on the screen. Is that the Turban study that you cite there in paragraph 28?

A Yes.

Q So just tell me what this paper is purporting to tell us overall broadly.

MR. SELDIN: Object to form.

A So I think I cited this paper as I was discussing the concept that attempts to change someone's gender identity using psychotherapy isn't helpful and this is -- the study I cited because it looks -- it's trying to answer that question by looking at adults and then getting a history of their exposure or non-exposure to these types of conversion efforts.

Q I'm sorry. Let's start with that "conversion efforts." What, I guess, do the paper's authors, and I assume you, mean by that term?

A So I think starting with the paper, you know, I think that -- I don't know what the exact question was, and I don't recall the exact question that was asked of the subjects. I do believe that the data that came -- that was used in this paper was based on that national

transgender healthcare survey. So there was a question in that survey asking participants whether or not they -- that they recall efforts to change their gender identity.

And so I think that was -- that was what the author meant, is the participants' perception of that occurring in their life.

Q Is there what's known in statistical analysis as a retrospective survey?

MR. SELDIN: Object to form.

A This is -- the survey type, yes, it's a retrospective.

Q Survey type.

A Yeah.

Q And are retrospective surveys understood to be high quality or low quality?

MR. SELDIN: Object to form.

A Well, I think that a retrospective survey is extremely helpful in different ways. You know, I think when you say the word "quality," I'm reminded of the use in sort of lay terms but also in sort of medical literature terms. Right?

So that when you're -- when we're talking about a retrospective study of, for example, recalled conversion efforts, you know, that's a

really challenging research study to ask -- right? -- because you can't -- we can't do what we call a randomized controlled trial. So if you think of, you know, trying to see if -- if a new antibiotic works better than the old one, you can set up what we call a randomized controlled trial where you have a hundred patients, 50 of them get randomized to group 1, 50 of them get randomized to group 2, and then they all get either drug A or drug B, and they don't know which one they're getting, and then at the end you see who does better. And if group A does better, then the new drug is better than the old drug.

Now, that's a really awesome way to do research because the only variable there is which drug you've got. So that's very controlled, and that would be what we consider in the terms of medical literature very high quality.

Now let's try to answer this question using a randomized -- a randomized study like that. Take 100 people and say, you know, these 50 are going to get therapy to try to change their gender identity. These people are going to get supportive therapy. And then 20 years from now let's see -- let's measure their lifetime suicide

attempt.

So you couldn't do that study obviously -- right? -- because, first of all, you would know which group you're in because you're the one getting the therapy.

Number two, no one would sign up for that study because there's not what we call equipoise. There's -- people in the study wouldn't believe that both options were equally effective. And then you wouldn't be able to, you know, likely conduct that study over long enough for it to be meaningful.

So, granted, we can't do that study with a randomized controlled trial. We need to attack that question from a different way.

So what Turban is doing here, he's saying this is a really complicated question. How can we get a sense for the answer to that question? One of the ways we can do it is we can do a retrospective study.

And so, yes, there's the -- in a retrospective study you don't have that control where there's only that one variable. So it's not as neat and tidy. But, unfortunately, this question isn't so neat and tidy. And so that's

why this is a study designed that -- one of the study designs that can be used when answering more complicated questions like this.

Q Well, who responded to this survey? Was it -- did it include people who desisted from transgender or gender dysphoria?

MR. SELDIN: Object to form.

A Yeah. So I think that the -- you know, the recruitment of subjects is really well outlined in the -- in the original national transgender healthcare survey, but it was, as I said, people that currently identify as transgender adults.

Q I see. So this doesn't include -- the response to the question about conversion, as you've put it, or as the paper puts it, is only among people who are transgender, not among people who might have been transgender at one time but no longer are?

MR. SELDIN: Object to form.

A Yes. This paper is asking this specific question in a group of transgender adults; what is the likelihood of suicide attempts based on exposure to conversion efforts.

Q Well, so you've got a group of people for whom these so-called conversion efforts were

unsuccessful. What does that tell you about whether psychotherapy or other efforts were successful with other people?

MR. SELDIN: Object to form.

A I don't think that this paper is necessarily asking the question -- this paper isn't necessarily asking the question has anyone's gender identity been changed with quote/unquote, conversion therapy. It's asking a different question.

It's asking in a group of transgender adults, currently identifying as transgender, what is the effect of conversion therapy, so . . .

Q What is the effect of conversion therapy on people on whom it did not work?

MR. SELDIN: Object to form.

A What is -- what is the effect of -- on conversion therapy in people that are currently identifying as transgender adults.

Q Well, I guess one would have -- well, I'm just trying to understand, what use can we make of this?

MR. SELDIN: Object to form.

A Well, I think that if we're going back to my

expert report -- right? -- I think the statement that I made is that -- was that attempts to force transgender people to align their gender identity with their birth sex have been found to be both harmful and ineffective. So this is an example of harmful.

I'm not sure I've provided a citation for ineffective, but I -- I think that that -- that literature also exists. However, I'm not planning to be an expert in that particular question.

Q Well, I mean, I guess this -- on the face of it, this paper suggests something about the impact on the people that responded to the survey of this so-called conversion therapy, but does it tell us anything about the effect on people who were not surveyed?

MR. SELDIN: Object to form. Asked and answered.

A So I think the question you're asking is a question about generalizability -- right? -- and this is a term that we use in all medical research. So, you know, why do I read this study in the first place? Probably because I'm thinking about a particular person or a

particular patient, and so I say, okay, this is what Turban, et al., found in people that are transgender adults that if they recall having had a conversion effort, as they put it in this article, that they did worse than if they didn't.

So then I say, okay, well, that's interesting. How does that impact --

Q Doctor, you're breaking up again.

A -- the patient that I have in front of me. Is it generalizable to that person?

Q Right. Right.

A So then I say, okay, that's interesting. So how does that relate to the person I have in front of me? Is it generalizable?

Well, the person I have in front of me may be a 13-year-old adolescent. And I say, well, is this generalizable or not? I think it's potentially generalizable because that person will become an adult, that the -- if the person currently has gender dysphoria and has, you know, consistent persistent gender identity different than the sex they were assigned at birth, then the person is very likely to continue to identify that way as an adult.

And so would I suggest efforts to change

their gender identity? Based on this paper, I would give pause to that because it seems like there's a risk of worse mental health outcomes in that situation.

Q Okay. So let's look at Exhibit 6.

(Shumer Exhibit 6 marked.)

Q This is Conversion Therapy, Suicidality, and Running Away. There we go. Good.

So, Doctor, is this the paper that the Fish -- I'm sorry -- the Campbell paper that you cited in paragraph 28?

A Yes.

Q Now, I notice that the copy that we have here for exhibit purposes says "Preprint not peer reviewed," and that's just because that's what we found.

Are you aware whether this paper has since been peer reviewed?

A I am not sure.

Q Have you -- when you read this paper, did you read it with this stamp across the front that says "Preprint not peer reviewed," or did you read something else?

A I don't recall there being a stamp across it like you're showing me right now, no.

Q Oh, okay. Were you aware when you read it that it had not been peer reviewed?

MR. SELDIN: Object to form.

A I believe I was, but I'm not certain about that.

Q Did that give you any concern about relying on it in your expert report?

MR. SELDIN: Object to form.

A I don't recall knowing or thinking about its peer review status in writing my report.

Q Well, I guess I'm just sort of wondering, does peer review status matter to you when you were putting together your expert report and relying on scientific papers?

MR. SELDIN: Object to form.

A It certainly does, but in this situation I just don't recall whether I knew it was peer reviewed or not.

Q Okay. So let's talk about what kind of a study this is. Is this another retrospective survey?

A I'm sorry. I'm going to move a little closer to the screen so I can see.

Q Oh, sure.

MR. FISHER: Maybe we could just make it a little bigger, Shawn.

A Can you give me a second to read the abstract

over?

Q Of course.

A Okay. Thank you.

Q Yes.

A I'm sorry. Can you repeat.

Q Yeah. My question was what type of study this was. Was it another retrospective survey?

A Yes. And, again, using data from the 2015 U.S. Transgender Survey.

Q And so -- okay. I think that's probably my only questions on that one.

(Shumer Exhibit 7 marked.)

Q Let's move to Exhibit 7, which is Sexual Orientation and Gender Identity Change Efforts. There we go.

Doctor, is this the Fish article that you cite in paragraph 28?

A Yes, I believe so. Yes.

Q So this -- it says at the top "Editorials." Is this just an editorial opinion?

MR. SELDIN: Object to form.

A Let's see here. So I'm trying to put myself back in my shoes writing my expert report. The Fish, et al., citation has -- was an effort for me to find a consolidated source where I was

demonstrating that the American Medical Association, the American Academy of Pediatrics, American Psychiatric Association, and American Psychological Association do not endorse efforts to try to change someone's gender identity.

So this does appear to be an editorial, and perhaps I could have -- or should have found individual citations for each of those organizations. But this was my effort to put a citation in the report along the lines of just demonstrating that these associations and academies have an opinion about this topic.

MR. SELDIN: And, Mr. Fisher, just for the record --

MR. FISHER: I'm sorry. You're breaking up.

COURT REPORTER: I need it to start from the beginning. Sorry.

MR. SELDIN: Sorry. A squirrel somewhere walked across the Internet line.

I was just telling Mr. Fisher, for the benefit of the record, that the document Dr. Shumer is looking at, at the table, is the as-filed copy of his declaration that I said he had in front of him.

MR. FISHER: Oh, okay. It's no different

from the one on the screen, though, in terms of content?

MR. SELDIN: No. I'm saying he's looking at a different document on the table. He's looking at his declaration --

MR. FISHER: Oh.

MR. SELDIN: -- to clarify how he's using this editorial.

MR. FISHER: Fair enough. Fair enough. Thank you. Okay.

BY MR. FISHER:

Q So, Doctor, is there any science in this editorial?

MR. SELDIN: Object to form.

A I would not classify this as a research study. I think the citation in the expert report is -- isn't science either. It's just a statement of where the American Medical Association, the American Academy of Pediatrics, the American Psychiatric Association, and the American Psychological Association stand with respect to efforts to change someone's gender identity using psychotherapy.

Q Are you aware of any peer-reviewed studies showing that what you and Turban call conversion

therapy is unsuccessful?

MR. SELDIN: Object to form.

A I could not provide a study that asks that particular question. I believe it exists, but I wouldn't -- I wouldn't suggest that, you know, the -- psychological approach to gender identity is the area of medicine that I am the most -- the most expert in as a pediatric endocrinologist.

Q Are you expert in it at all?

MR. SELDIN: Object to form.

A I think that certainly working with -- working as part of a multi-disciplinary team, treating kids with gender dysphoria, I consider myself an expert in gender dysphoria.

Q But what about the psychological aspect?

MR. SELDIN: Object to form.

A Regarding the question does efforts to change someone's gender identity using psychotherapy -- is that safe and effective -- I am familiar with the literature that I presented in my expert report, and my understanding of literature not cited is that -- that it is not safe or effective.

But I -- without having more citations, some of that statement comes from the fact that these

medical associations that I know and respect, who have done more work than me trying to answer that question, have come to the conclusion that, no, it is not safe or effective.

Q When you are writing paragraph 28 of your report, did you look for studies demonstrating that what you call conversion therapy is unsuccessful?

MR. SELDIN: Object to form.

A I don't recall if I -- what my search strategy was. I think that I went into writing my report knowing the stance of these four associations that I respect and wanted to include that in my report to make this point and didn't -- I don't recall other -- other search efforts that I did in writing this particular paragraph.

Q Have you ever searched for peer-reviewed studies showing that what you call conversion therapy is unsuccessful?

MR. SELDIN: Object to form.

A I think the way that you're asking the question is interesting -- right? -- because you're saying search for studies that say conversion therapy is successful. That's --

Q No. Unsuccessful. Unsuccessful.

A Unsuccessful. So I wouldn't say that's how

anyone searches for anything. Right? That the question is what do we know about conversion therapy? So you don't go into a search, you know, having your answer before you have the study. Right?

So in my searching for information on the safety and efficacy of conversion therapy, this is what I came up with. What I didn't do is I didn't say, "Give me papers that say conversion therapy is successful. Now give me papers that say conversion therapy is unsuccessful, and let me read both of those." Right?

The search is: What is the effect of conversion therapy? And when I ask that question in preparation for my expert report, these are the materials that I -- that I discovered.

Q Okay. Fair enough. What is the etiology of transgenderism?

MR. SELDIN: Object to form.

A Gender identity diversity is sort of a normal form of human diversity, I would say similar to other elements of human diversity. For example, sexual orientation is another, you know, form of human diversity. And in these very complicated elements of personhood, you know, there's

probably a lot of factors that goes into someone's gender identity, that we -- we do have some suggestions about what some of those are. And to be honest, we don't have the full picture, but we understand that there are certain biologic elements that can contribute to one's gender identity.

Those things seem to involve differences in genetics, differences in potential hormone exposures in fetal life and other -- other biological -- biologic influences that we may not understand.

Q What about social influences?

MR. SELDIN: Object to form.

A I certainly think that our social world helps to -- allows for people to put context to their gender identity.

So, you know, if I was born on a desert island and never had any exposure to any other person, I might not have such a deep self-concept of gender. But because I'm placed in the world and interact with the world, I'm able to understand myself in the world in lots of different ways, including gender identity.

So I think it's -- it is unclear all of the

elements that impact someone's gender identity or that -- not impact but that are -- that contribute to one's gender identity.

I think of social impacts more as helpful in putting context to one's gender identity.

Q If you were born on a desert island and there was nobody around and you didn't know, therefore, about your gender identity, would you be still be able to discern your sex?

MR. SELDIN: Object to form.

A Yeah. You know, I think that if I was born on a desert island and no one else was around, I would just know me. Right? So I wouldn't know that there was any diversity in any human characteristics. So I wouldn't have any self-concept of sex, gender, or anything else.

Q Notwithstanding that, would you still have sex organs?

MR. SELDIN: Object to form.

A I presume that I would.

Q Great. So you mentioned on the biological influences -- well, first, let's talk about genetic because I want to make sure I understand what you mean by that.

I guess my very simple take on it is that

you're saying that if one's genetic parents had some predisposition, that that could be passed on to the children, but that still wouldn't explain why the parents had it. Is that -- am I looking at it the right way, or is there some other point you're trying to get across?

MR. SELDIN: Object to form.

A Yeah. So I think that's boiling down genetics into, you know, two sentences. But I would say that, you know, all of us have hundreds of thousands or millions of genes, and those genes encode information that dictates how all of our cells work and dictates, you know, why my eyes are blue and Harper's are brown.

But, you know, I think when I -- when I'm talking about genetics here, I'm thinking about how these genetic differences may have some impact on one's gender identity.

And so, you know, I think that I use the example of twin studies because, you know, what we don't have is -- you know, there are certain genes that have a very obvious function, and that function is only one thing. Right? So if you have -- if you have a gene mutation for Huntington's disease, you're going to have

Huntington's disease.

But other things are much more variable. Right? So height isn't just one gene. It's probably a whole host of genes working together as a team to impact how the body works.

So some of those more complex human characteristics that do have to do with genetics have to do with genetics and in not so much one a gene/one effect sort of way.

So oftentimes when you're trying to say, like, well, how much are -- is genetics itself contributing, you might think to look at twin studies because identical twins share all the same genes. And so while it doesn't answer the question about which genes, you know, you can use those types of studies to understand if there's a genetic impact on a human characteristic.

Q And so are there such studies suggesting some genetic connection to being transgender?

MR. SELDIN: Object to form.

A There are studies looking at twin pairs with a question about, you know, concurrence of their gender identity.

Q Do you cite those studies in your expert report?

A I believe so. I'd have to go back and refresh my

memory.

Q Can you just leaf through quickly and let me know because I think -- I want to make sure I understand which studies we're talking about.

A You know, I'm not sure now that I'm reading -- I'm reading paragraph 29, which I think is the paragraph where I'm sort of talking about biologic determinants of gender identity, and I'm not want sure that I cited a twin study in this report.

Q Why not?

A Because my expert report isn't able to cite all of the volumes of evidence regarding all of the biologic factors of -- biologic impact of gender identity but was intended to be a helpful review.

Q Excuse me. One second.

MR. SELDIN: Dr. Shumer, you've silenced Mr. Fisher with your brilliance.

MR. FISHER: Now you've done it. All right.

BY MR. FISHER:

Q All right. Well, let's take a look at Exhibit 8 which is, I think, the Chung study. I think this should -- yes.

Is this the Chung study that you cite in paragraph 29?

(Shumer Exhibit 8 marked.)

A Yes.

Q Okay. And, you know, I did the best I could to make it through this, but I'm wondering if you could just show me where it says that there are similar brain structures between trans women and ciswomen.

A Well, I can't read the words because that's too small.

MR. FISHER: Yeah. Let's blow it up a little bit, if we could.

A So I'm not seeing it on the words that I'm reading right now. If the -- if the cited paper doesn't have that specific language, then there may be a miscitation, but I'm not sure I can answer your question.

MR. SELDIN: Dr. Shumer, do you want to go -- would it be helpful to go through the whole report or --

THE WITNESS: This particular paper?

MR. SELDIN: Yeah.

THE WITNESS: Probably.

MR. FISHER: Harper, do you have it?

MR. SELDIN: I mean, I could probably pull it up for him, but maybe that's better to do at a break.

MR. FISHER: Okay. That's fine.

MR. SELDIN: We'll just -- he hasn't had an opportunity to review the whole thing, and it's kind of hard on the screen, so --

MR. FISHER: Yeah.

MR. SELDIN: -- before he says what's in or not in the paper and he hasn't had a chance to review, if you want to follow up on that question after a break, maybe we can have him look more thoroughly.

MR. FISHER: Yeah. That's a good idea.

MR. SELDIN: Yeah. Just maybe shoot me an e-mail with the particular exhibit number, and we can still go back after the next break, if you want to.

MR. FISHER: All right. It's Exhibit 8. Razi, can you do that?

MR. LANE: I will do that.

A I am seeing -- okay. Yeah. I mean, I think as you said, this is a very dense paper. So, you know, I'm seeing in the first -- the first paragraph here, "Differences in the size of the human BSTc have been related to the gender identity disorder transsexuality, in which

subjects voice the strong feeling of being born in the wrong sex. In male-to-female transsexuals the BSTc was similar in size to that of control women, whereas in the only female-to-male transsexual studied so far, the BSTc was similar to that -- in size to that of control men."

You know, I think that what I wanted to just point out is that this, obviously, is a very complicated neurosurgical paper talking about nuclei of the brain. And nuclei are just sort of areas of neurons. And it is very clear -- very -- what do I want to say? I do not claim to be a neuroscientist and don't even know what some of these, you know -- what some of these nuclei do in terms of neuro function.

The point of citing this paper is that while we don't understand why these nuclei may or may not be aligning more with gender identity than sex assigned at birth, that there is some data to suggest that it does.

Does this answer the question of why someone has one gender identity versus another? I'm not -- I'm not purporting that it does.

But, you know, I think that in some of these very complicated and complex human

characteristics, like gender identity, you know, when we don't have a complete understanding of the etiology of one's gender identity, there's, you know -- there's a scientific search for some of those answers.

Some of that searching has led to some of this neuroscientific data, and so its incorporation in the expert report, I don't want to overstate that I -- that I know why these nuclei are bigger or smaller in men and women and trans people and, et cetera, but just to sort of highlight that there's -- there are biologic differences that are measurable in people with different gender identities.

BY MR. FISHER:

Q Is there overlap between the size of the stria terminalis between males and females?

MR. SELDIN: Object to form.

A Absolutely.

Q Can one determine the biological sex of an individual by looking at the size of that structure?

MR. SELDIN: Object to form.

A You can't. And, you know, this is sort of similar to what I -- how I would describe, like,

human height. Right? So that you have certainly biologic impact on height, and also people assigned male at birth on average are taller than people assigned female at birth, and there's overlap.

So if you tell me the height of a person, I cannot tell you if that person is assigned male or female at birth. But because there's differences in those bell-shaped curves that do, in fact, overlap, that we can then ascertain that there is a biologic effect on human height.

In a similar way, as I understand it, specific nuclei have different sizes in people assigned male and female at birth. Similarly to height, there's overlap in those bell-shaped curves, that you can't tell me the size of someone's specific nuclei and then I can tell you what sex they're assigned at birth. And that being said, that there seems to be some data that gender -- that people with differences of gender identity may have nuclei size more akin to their sex assigned at birth.

Q Is there -- with your height analogy, is there an analogous, I guess, collateral inference to the comparisons you're making -- or between trans people and natal sex?

MR. SELDIN: Object to form.

A No, I don't think so. I think that was just to explain why you can't use the size of a nuclei to tell someone's sex assigned at birth. That was just sort of a --

Q Oh.

A -- a way that I like to think about it.

Q Okay. Are you familiar with neuronal plasticity?

A I think I'm familiar with the term. I have a concept of what that means, yes.

Q What's your understanding of what it means?

A How our brain changes over time.

Q Do we -- is it possible that there are social or environmental effects that can change the appearance of the stria terminalis?

MR. SELDIN: Object to form.

A I don't know the answer to that question.

Q Okay. Let's go on to Exhibit 9, which is the Savic study, Sex Dimorphism.

(Shumer Exhibit 9 marked.)

Q And, Doctor, similar to the last report, I just need your help here. Show me where this study shows the -- a biological connection to transgenderism.

THE WITNESS: Can you zoom in a little bit more on the abstract there.

Thank you.

MR. SELDIN: And, Mr. Fisher, while Dr. Shumer reads, what do you think about breaking a little bit after the hour just for a couple minutes?

MR. FISHER: Yeah, I was thinking the same thing. Thanks.

MR. SELDIN: All right.

MR. FISHER: I'd like to get through this line of questioning first, but then we can.

MR. SELDIN: No. I won't hold you to the exact minute. And Dr. Shumer can go all day, but I will need a break.

A Thank you.

Yeah. So this paper is comparing different brain parts in postmortem analysis in heterosexual men, heterosexual women, and trans women. And it -- and as you pointed out, this is very dense and, you know, some of the neuroscience is, of course, not in my wheelhouse.

I think that the authors are showing that in some parts of the brain the -- the size was more similar to the sex assigned at birth. In other

parts, it differed from both the sex assigned at birth and cisgender women.

Again, what that means, I don't think that I nor the author is going far enough to say, you know, that the size of the hippocampus, for example, is -- indicates your gender identity.

I merely included this article to demonstrate that there are, you know, seemingly certain parts of the brain that are more similar to people with the same sex assigned at birth and other parts which may differ. And so I included this to sort of build on that statement.

BY MR. FISHER:

Q So you think that this is a -- this shows that there's a biological connection?

MR. SELDIN: Object to form.

A So the statement in my expert report is that gender identity has a biological foundation, and well, certainly brain anatomy studies are not -- not -- not so open and shut that, you know, if you're transgender you're -- this part of the brain all of a sudden appears, you know. It's not that simple.

But there does seem to be some biologic associations between some of these brain

anatomy -- some of this brain anatomy and gender identity.

Q Can you conclude from this study that brain anatomy causes transgenderism?

MR. SELDIN: Object to form.

A No. I use it as an example to support the notion that gender identity has a strong biologic foundation.

Q Strong biologic foundation. This shows that there is a strong biologic foundation. I guess I don't really understand what that means.

Do we know that there's a biologic foundation from this study?

A I don't -- I think this study is one of the multiple studies that contribute to our understanding of the biologic foundation of gender identity. That's why I included it in my report.

Q Doctor, and I don't -- I'd really like to just highlight in my own copy the relevant passage. If you could just tell me where the relevant passage is in this paper so I can highlight it, just for my own utility.

A Okay. Well, you know, one thing -- one part that I would -- if you scroll back up. You know, just

in the abstract -- so two-thirds of the way down, "MtF-TR displayed also singular features and differed from both control groups by having reduced thalamus and putamen volumes and elevated GM volumes in the right insular and inferior frontal cortex and an area covering the right angular gyrus."

So it's saying that this group differed from the two control groups in these specific areas. Again, not saying that, aha, this -- the size of your right insular and inferior frontal cortex is the -- that's the gender -- the gender identity answer right there. It's included to build on the rest of the literature surrounding biologic foundation of gender identity.

Q Well, do you see the next sentence. "The present data do not support the notion that brains of MtF-TR are feminized."

What is that sentence saying?

A So I think that their conclusion of all of these different things led them to that statement. So there's some parts that are more similar and other parts that are different.

So, you know, I -- I can't -- I don't feel comfortable going into more detail about what all

these findings mean. Just to say that there are -- there were some findings in this particular study showing differences in the study group compared to the control groups, and that's why I included it in my report.

Q Do you think that the authors were wrong in the abstract when they say "The present data do not support the notion that brains of MtF-TR are feminized?"

MR. SELDIN: Object to form.

A I'm not -- I don't want to discredit the authors. I'm just including it in my report based on information that's contained in the paper similar -- such as what we highlighted above.

Q Based on your understanding of this paper, do you agree with that sentence, "The present data do not support the notion that brains of MtF-TR are feminized"?

MR. SELDIN: Object to form.

A I'm not agreeing nor disagreeing. I'm just pointing out that there are some studies showing brain differences in transgender people.

Q Well, but why didn't you mention this finding -- this conclusion in your report?

MR. SELDIN: Object to form.

A There are certainly lots of brain anatomy that is unrelated to gender identity. Right? And more to learn about brain -- brain anatomy differences amongst males and females and people with differences in gender identity.

As you said at the beginning of our interaction, you know, is there a brain test study that you can do to determine someone's gender identity? And the answer is no.

Does there seem to be some data to suggest some differences? In my review of the literature, the answer seems to be yes.

Q But not in this paper?

MR. SELDIN: Object to form.

A In this paper, I'm seeing several instances where they had -- that they have brain structures that they say were more similar to the people with the same assigned sex at birth and others where there's -- where there's differences. So I think that the -- the conclusion of the authors is trying to summarize that.

In the course of reading the paper, I included it in my report, not, again, to say that this is -- this brain structure is the answer to gender identity but to point out that there does

seem to be some differences related to gender identity.

Q Did you not include the sentence that "The present data do not support the notion that brains of MtF-TR are feminized" because that sentence didn't support your conclusion?

MR. SELDIN: Object to form.

A I think my conclusion that gender identity has biologic foundation is based on a myriad of different sources that I've tried to include at least some of in my report and that -- that my -- that my use of citing this paper specifically was an attempt to point that out.

But I didn't get as -- you know, obviously there's -- one, two, three -- four citations at the end of that sentence, so I didn't get as granular as you're describing.

Q Okay.

MR. SELDIN: Mr. Fisher, we've been going for over an hour. Do you have more on this paper?

MR. FISHER: Not on this one. I did want to get into Luders and Berglund and Rametti. But if we need a break, that's fine. We can take a break. We can come back -- and we can hit those

before lunch then.

MR. SELDIN: Great. Why don't we come back at 11:15.

MR. FISHER: Awesome. Thanks.

MR. SELDIN: Thank you.

(Recess taken from 11:09 a.m. to 11:15 a.m.)

BY MR. FISHER:

Q So let's turn now to Exhibit 10, the Luders study, "Regional gray matter variation in male-to-female transsexualism."

(Shumer Exhibit 10 marked.)

Q Okay. Doctor, this is another one of the studies cited in paragraph 29 of your report?

A Okay. Yep.

Q Okay. And what is this study purporting to tell us?

MR. SELDIN: Object to form.

A Well, I think, similarly, a discussion of very specific brain findings that show measurable differences that seem to be more aligned with gender identity than sex assigned at birth.

Q So if you would look, please, at page 4, the first paragraph there under "Discussion." I'm sorry. Not that one. The next paragraph, where it says "Further research."

It says, "Further research needs to resolve whether the observed distinct features in the brains of transsexuals influence their gender identity or possibly are a consequence of being transsexual."

What do you take that sentence to mean?

MR. SELDIN: Object to form.

A I think that it is asking the question of causality. Right? Is the -- the differences that we're seeing, is it the cause of -- is it contributing to one's gender identity, or does the gender identity contribute to the finding that we're describing in this paper?

Q And this paper doesn't purport to tell us which it is, correct?

MR. SELDIN: Object to form.

A This paper is describing the difference and then asking -- in their discussion, like in any paper, saying that there's limitations to this, that they haven't -- that they're describing further research needed to resolve the question of causality in -- after their conclusion.

Q Without an assessment of causality, how is this paper evidence of a strong foundation -- strong biological foundation of transgenderism?

MR. SELDIN: Object to form.

A You know, I think that it's fine to say that none of these papers are a smoking gun that points to a biologic root of gender identity, that in my review of this material -- "this material," material related to genetics, hormonal influences -- the conclusion that I come to is that there is a biologic foundation to gender identity.

Do we have all the answers to why? We do not. I think that this paper is interesting with respect to the fact that they are able to measure these differences.

Are they able to prove causality? No, and they say that.

But, you know, with all of the other materials presented, my opinion is that there's evidence to biologic foundation of gender identity.

Q Well, this one doesn't show it. Savic said you can't -- that there isn't enough data. Is it just Chung?

MR. SELDIN: Object to form. Misstates testimony.

A I'm testifying that -- if the question is, is

there biologic foundation to gender identity, in my review of all of the literature, including the ones that I included in my expert report, my conclusion is that there does seem to be.

That, you know, I think that when -- when trying to answer a really challenging scientific question, you know, that the findings of each individual paper aren't going to lead you to a definitive conclusion.

But in trying to answer that challenging question, one pulls from a variety of different sources to come to a conclusion.

The conclusion that I reached upon review of this evidence is that there is a biologic foundation to gender identity.

Q Is that conclusion based on studies that are not cited in paragraph 29 at all?

MR. SELDIN: Object to form.

COURT REPORTER: Doctor, you're frozen again. I'm sorry. You'll have to start again.

A Yeah. So I think my attempt in paragraph 29 was to provide a representative sampling of some of the data which supports the notion that gender identity has a strong biologic foundation, you know. Certainly there could be chapters written

specifically just about that question, and I don't think that's why I was called as an expert. But hope to, that -- in providing at least some of the representative materials, that the point would be sufficiently made.

Now, whether it is for each reader, I suppose that -- that's up to you. But I hope that -- at least my effort was to provide a representative sampling of materials to demonstrate the notion that gender identity has a biologic foundation.

BY MR. FISHER:

Q Well, thank you. But I guess I just really want a yes-or-no answer.

When you say that "scientific research and medical literature across disciplines demonstrates that gender identity, like components of sex, has a strong biological foundation," are you relying on studies or sources of evidence other than what's cited in paragraph 29?

MR. SELDIN: I'm sorry, Mr. Fisher. Were you reading from his declaration?

MR. FISHER: Yeah, I was. It's paragraph 29.

MR. SELDIN: Okay. So -- sorry. I apologize for interrupting.

A I believe the answer to your question is yes. You know, I think that the statement itself, "scientific research and medical literature across disciplines demonstrates that gender identity, like other components of sex, has a strong biological foundation," is a statement that I agree with based on my understanding of a wide variety of literature.

And for the purposes of writing this report, I tried to include some of that literature but certainly, you know, for the purposes of logistics and brevity, can't include everything.

But I agree with the first sentence of paragraph 29, and whether there's other citations that could help support that statement that aren't included, certainly there are. And I guess that's where I would leave it.

BY MR. FISHER:

Q Okay. So back to Luders. Does Luders say anything about any connection between the -- kind of the brain phenomena it was studying and sexual orientation?

MR. SELDIN: Object to form.

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A I don't recall.
Q And if we look at -- back to the subject of causality, if we look in that same paragraph that we were talking about before, it looks like the -- it's either the second or third sentence. Well, the second sentence says that there may be other variables affecting both the expression of a transsexual identity and the neuroanatomy in transsexuals that led to these observed associations. "Some possible candidates include genetic predisposition" -- which I think you've mentioned -- "psychosocial, and environmental influences, hormone exposures, or most likely an interplay between these variables."
You're familiar with that sentence?
A Yeah, I heard you read it.
Q Yep. Had you read it before? Were you aware of it before?
A Yes. I've read this paper.
Q And one thing I think I wanted to ask you about, that I'm not sure we have any studies on, is the hormonal connection. And what did you mean by the hormonal connection -- the potential for hormonal connection?
MR. SELDIN: Object to form.

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A Well, so, for example, a patient population that I also take care of is individuals with something called congenital adrenal hyperplasia. And in this condition, someone born with, you know, chromosomal sex female has a problem in their adrenal glands making certain hormones. And as a result, in fetal life those individuals are exposed to higher than level -- higher than normal levels of androgens or what we would think of as more masculine hormones.
And so babies born with congenital adrenal hyperplasia, with an XX carrier type, often have, you know, virilization of their anatomy to some degree and require treatment for this condition called congenital adrenal hyperplasia or CAH.
Now, after they're born, girls with CAH receive medications to lower that androgen level and lower it back into the normal female range. That subsequently there are overrepresentation of adult women with CAH that have a difference in their gender identity.
And so the notion there is, you know, perhaps does this fetal exposure to higher than normal androgens in some way influence future gender identity?

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I think that in other examples you have -- you know, in examples of -- for someone with a chromosomal sex of XY, who during fetal life, you know, was making testosterone and then had amputation of the penis right after delivery, as horrible as that might sound, and amputation of the testes, and so the person raised female then had a gender identity of male, potentially due to impact of hormonal exposures.
I think that this notion that complicated human characteristics, such as gender identity, are likely an interplay of many different factors is correct, that, you know, on the one hand my CAH example might be -- it might be interesting, but as it turns out, the majority of adult women with CAH do not identify as men. Right?
So if it was only hormonal exposure, then we would expect all women with CAH to be transgender. If it was only the size of your putamen or whatever, from these studies, then we could use -- you know, use that as the test, which we've talked about you can't.
So, really, that -- with a complex trait like gender dysphoria, you know, these influence of multiple factors, you know, similarly to other

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human characteristics seems to, you know, work together in each individual person to help -- help to form our gender identity.
Q Including social and environmental factors?
MR. SELDIN: Object to form.
A Certainly I think that narrows -- you know, there's lots of different exposures that we have along the way. You know, we've talked about hormone disrupters from the environment. You know, there's a lot of different unknown factors also involved with gender identity just like other human characteristics.
So environmental exposures and factors certainly could play a role, similarly, to genetic, hormonal, and other biologic influences.
Q Let's take a look at Exhibit 11. This is the Bergland study, Male-to-Female Transsexuals.
(Shumer Exhibit 11 marked.)
Q Doctor, are you familiar with this study?
A Yes.
Q Is this another of the studies cited in paragraph 29 of your declaration?
A Yes.
Q What is this study purporting to tell us?
MR. SELDIN: Object to form.

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A So I use that as another example of the same things that we've been talking about with respect to, you know, search for variations in brain -- brain activity or anatomy based upon one's gender identity.

Q How many subjects were the focus of this study?

A If you'd give me a second to zoom in a little bit here.

Q Yes.

A So they studied 12 transgender individuals in this particular study.

Q Is that a statistically significant data set in your view?

MR. SELDIN: Object to form.

A I think it depends on what question you're trying to ask. Right? You know, I think that the authors here are presenting a finding from 12 people. Does this, again, answer the question? Is this a smoking gun as to, aha, this is -- we can use this particular test to find gender -- find someone's gender identity? Of course not.

But I included it just, again, as another representative example of the point that I was trying to make with the first sentence of paragraph 29.

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Q So can you generalize from this study?

MR. SELDIN: Object to form.

A I'll give the same answer that I've been giving for all of these studies, that as a -- when taken in whole, I would suggest that these studies and the body of literature, in my estimation, does lay credence to the idea that there's biologic foundation to gender identity.

Q I'm not talking about the body of evidence. I'm just asking about this one study. Can you generalize from this one study?

MR. SELDIN: Object to form. Asked and answered.

A The study is part of the body of evidence that I'm referring to. So no one study is going to answer such a complicated question as the one you're asking. I don't think the authors, when they published this study, were thinking that they were closing the book on what determines one gender identity.

They were contributing to a body of literature that I attempted to summarize.

Q So, no -- the answer is, no, you can't generalize from this study?

MR. SELDIN: Object to form.

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A I don't think I would change my answer to the one I just gave.

Q Well, I'm not clear what your answer is, really. Just "yes" or "no." Can you generalize from this study?

MR. SELDIN: Object to form.

A Generalize what?

Q Generalize the conclusions that they purport to draw.

MR. SELDIN: Object to form.

A Okay. So let's try to answer that. So the conclusion is that a person's --

MR. SELDIN: Shawn, can you make it a little bit bigger?

Thank you so much.

A Okay. So I think you're asking can we say how -- if a 13th person came along, how their -- how their cerebral activation would work when smelling 4,16-androstadien-3-one and estra-1,3,5 (10), 16-tetraen-3-ol? You know, I don't think that we can generalize what would happen to that 13th person.

And, you know, so the study is describing what they found with the 12 people that they studied. Is this study helpful? I think it's

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helpful.

Does it generalize to my work with 13-year-old patients that I'm seeing in the office? You know, I don't know. I think that depends on the question that I'm being asked when thinking about that 13-year-old. You know, if the question is does this person need treatment for -- should I be following the clinical practice guidelines for the treatment of gender dysphoria in this 13-year-old? You know, I think indirectly this helps with that question because it helped to form the current guidelines that we use in practicing medicine related to gender dysphoria.

But I'm not thinking about this specific article when generalizing to that 13-year-old in the office.

BY MR. FISHER:

Q So this study also has a statement -- and I was hoping you could help me unpack it -- under the "Discussion" -- I'm sorry. It's not under the "Discussion." It's -- well, yes, it is. It's "Methodological Issues."

On page 1906, the paragraph that's on the left column at the bottom, beginning "The primary

hypothesis."

A All right. Can you orient me again, where you were?

Q Yeah. Yeah.

MR. FISHER: Right there. If you could blow that up a little bit, Shawn. The paragraph that begins "The primary hypothesis." A little bit farther down, Shawn.

There we go.

BY MR. FISHER:

Q So in the middle of this paragraph, it says -- it has -- well, it has a discussion about homosexuality and transsexuality. But it says, "Nonhomosexual transsexuals may be heterosexual, asexual, and bisexual." And then it says, "Optimally, our transsexual subjects should have been strictly heterosexual according to the present operative definition (having only female sex partners), like our male controls."

So -- and I'm wondering, if you could, please, just unpack that and help me understand what these authors are saying about their methodological limits in light of that statement.

MR. SELDIN: Object to form.

A All right. You're going to have to give me a

second here.

Q Okay.

A Okay. So I think what's going on here is they're saying, okay, we're trying to isolate gender identity here and not be measuring differences based on sexual orientation. Right? So, for example, if you have -- if you have a finding that smelling these chemicals has a different response in gay men compared to straight men and then you're now wanting to -- and that's -- and that's a known fact. Right? Let's say that that's a known fact, that smelling these chemicals is different based on one's sexual orientation.

Then you want to say, okay, well, I'm interested in the -- I'm not interested in learning more about sexual orientation. I'm interested in learning about gender identity.

They're saying that if you include -- if you're doing a study with trans women now, that you don't want to cloud the findings by including people of various sexual orientations because you're trying to isolate the finding that you're looking for, which is related to gender identity.

That's how I would understand that sentence.

Q So do you understand them to be saying that they were -- given their 12 subjects, they were unable to control for sexual orientation?

MR. SELDIN: Object to form.

A I don't -- you know, I'm not sure. I guess I -- I'd have to go back and see if they mention -- where they mention how they assess some -- the subject's sexual orientation.

Q Do you -- when you first read or when you studied this paper have you thought about that control -- that methodological control and whether it was in place and fully accounted for?

MR. SELDIN: Object to form.

A You know, I think that I had no knowledge of this type of study in the first place, and so I think that there -- you know, when I read this study, you know, the question they're answering is one that I'm not very familiar with, about brain activation in sniffing different chemicals. Right?

And so, you know, does that -- as to whether there has ever been thought to be a difference in that response based on someone's sexual orientation, you know, I wasn't aware of that. So when reading this sentence, you know, they're

pointing out that question. And I still don't know the answer to that.

But what I do know is that this paper continues to serve as, you know, one example of the interesting but, you know, somewhat esoteric findings that we see in the brains of people with differences of gender identity.

Q Well, when you decide to rely on a paper, do you take into account the methodological controls that are in place when it was written?

MR. SELDIN: Object to form.

A I do.

Q Did you take into account this methodological control when you were relying on -- deciding to rely on this paper?

MR. SELDIN: Object to form.

A I did. I felt like this paper was instructive in regards to trying to support my -- my argument that there's biologic foundation in -- biologic foundation to gender identity despite the fact that all articles have limitations.

Q Well, but I'm worried about this specific limitation. Despite the failure to control for sexual orientation, you felt that this said something about gender identity?

MR. SELDIN: Object to form.

A If you -- I might be able to answer this question a little bit better if I am given a little time to read the whole paragraph, if you would.

Q Yeah. Go ahead.

A Okay. Thank you.

Q Yes.

A Yeah. So what they're saying is they purposefully did not include homosexual, as they're referring to it, or gynecophile, people attracted to women -- hold on.

Only nonhomosexual transsexuals were included in this -- in the present study, is the sentence before the one highlighted. So what they're saying is they were thinking about this question that you're asking. Should we be trying to account for sexual orientation? And this is how they did it. They excluded nonhomosexual transsexuals.

The next sentence is saying, you know, but of course we know that sexual orientation is a spectrum and that some people are asexual. Some people are bisexual. Do we know for sure if all of the subjects in our study had ever been attracted to someone of a different sex? You

know, impossible to say. But at least we tried to account for that by not recruiting nonhomosexual transsexuals.

So, you know, I think that they're sort of going above and beyond to say like, yep, we didn't want to include this group. We didn't, but there's still -- you know, because sexual orientation is so complicated, you know, this is something that is, you know, still possible, that maybe a participant or some participants have a sexual orientation that's not so straightforward.

So if the question is does that make me feel like this study should be disregarded, I would say absolutely not.

I think that, you know, it's still instructive to the degree that it helps as one more, you know, piece of evidence regarding the overall argument that I was trying to make.

Q Given your observations about sexual orientation, do you think it's possible to control for sexual orientation when doing a study such as this or other, you know -- a study of the brain when you're trying to figure out if gender identity is related to brain structure?

MR. SELDIN: Object to form.

A I think it's possible to account for sexual orientation. You can ask what someone's sexual orientation is. You can include people that only provide a certain answer. And, you know -- but as a very complex trait, just like gender identity, you know, sexual orientation is not as black-and-white, as we know, as, you know, straight or gay. So I think that that -- you can -- you can account for it, but that like any study there's going to be limitations that you discuss -- in every study there is discussion of these limitations.

So I don't think that brain studies regarding gender identity are impossible to do because people have a gender identity, but I think it's something that researchers attempt to control for, just like they did in this study.

Q That was going to be my next question. You used the term "account," and then in the last sentence you used the word "control." Are you using those two terms interchangeably from a scientific perspective?

MR. SELDIN: Object to form.

A I don't know how I was using them in that sentence, but I would describe "control" in a

study as trying to isolate the finding that you're interested in. So if you're not interested in the effect of sexual orientation on the outcome, then you're going to attempt to enroll patients with the same sexual orientation and have the variable be something else that you're interested in.

Q Yeah. Fair enough. I just wanted -- you said that these authors attempted to account for it or there could be an attempt to account. And I'm wondering if that in your mind equates to control.

If someone accounts for something, in your mind again -- I'm just trying to understand what you're saying -- is that the same thing as controlling?

A Yes.

Q Okay. Let's go on to Rametti, Exhibit 12. Rametti white matter micro structure.

(Shumer Exhibit 12 marked.)

Q Okay. So, Doctor, is this the same Rametti study cited in paragraph 29 of your declaration?

A Yep.

Q What is this study purporting to tell us?

A This is sort of a very similar idea to the others

that we've been reviewing, that there's microscopic brain differences in people, that while they overlap between the sexes, are subtly different. And that in this example they're talking about a different part of the brain, white matter, and referring to people assigned female at birth, comparing these structures to -- so people that were assigned female at birth that are not transgender.

Q Do you know whether these authors controlled for sexual orientation?

A I don't recall.

Q Under 4.2 -- this is on the -- I guess page 5, it looks like. 4.2, Strengths and limitations.

MR. FISHER: There we go.

BY MR. FISHER:

Q 4.2, Strengths and limitations. The second paragraph there says, "One limitation of this study is that the conclusions are not generalizable to male-to-female transsexual subjects since we have not included a cohort of nontreated male-to-female transsexuals." Why not -- I mean, why does that mean that it's not generalizable?

MR. SELDIN: Object to form.

A They didn't study that. This is a study regarding people assigned female at birth.

Q So this white matter could be theoretically associated with gender identity for female to male and yet not be associated with male to female? Is that sort of the proposition we're dealing with?

MR. SELDIN: Object to form.

A Well, I would say that they're saying that their findings -- they have a finding in people assigned female at birth, but they have nothing to say about people assigned male at birth because that wasn't the question they were asking nor the question that they're able to answer with this study.

Q And I'm just wondering at a theoretical level why would we suppose that it would be different for one, you know, female to male, but not male to female?

MR. SELDIN: Object to form.

Q Why assume a difference? Why not just say, well, it's humans?

MR. SELDIN: Object to form.

A Well, I think you can assume anything you want, but they're saying in this study they're not

asking that question or able to answer it. They're only discussing what they're studying, which is people assigned female at birth.

Q Well, notwithstanding that, do you think that it's generalizable anyway from female to male to male to female?

MR. SELDIN: I'm sorry, Mr. Fisher, you broke up during the question.

MR. FISHER: Oh, I'm sorry.

BY MR. FISHER:

Q I'm just wondering, notwithstanding this limitation, do you think it's, in any event, generalizable to the male-to-female transsexuals?

MR. SELDIN: Object to form.

A I don't know. I think the question you're asking is, you know, if we repeated this study and did the study comparing people assigned male at birth and compared the same white matter to people assigned male at birth who are now -- that are trans women, would there also be a significant result of that study? I don't know the answer to that.

The answer to the -- this study is related to trans -- trans -- trans men. Right? So I don't know.

Q Okay. I think we're done with that exhibit.

MR. FISHER: It's getting close to noon. Do you want to -- this is a fine time to break for lunch, Harper, if you like, or I can go a little bit longer. Whatever you think.

MR. SELDIN: Yeah. I think that's fine. Just when we come back, let's just talk about clock management. Dr. Shumer needs to be done at 5:30.

MR. FISHER: Oh.

MR. SELDIN: By my count, you still are going to be fine with your 7 hours with a 45-minute break and some lunch break, but, you know, we can get down to minutes if you don't think that's the case. But how about we come back at 12:45?

MR. FISHER: Yeah. I mean, you know, I am a little concerned now that you mention it. So is 12:30 too fast to get back? Is that too soon?

MR. SELDIN: Well, so I think as of 12:15 that you will be going three hours, with about 15 minutes of breaks built in. So if we come back at 12:45 or 1:00, you still have -- we have time for breaks. So I suspect we don't need to go to the judge over 7 minutes. So why don't we come

back at 12:45, and everyone will be okay.

MR. FISHER: All right. Thanks. Sounds good. We'll see everybody then.

(Luncheon recess taken from 11:55 a.m. to 12:44 p.m.)

MR. FISHER: Let's go back on the record then.

BY MR. FISHER:

Q Doctor, let's turn to your report again. This time to paragraph 30. And here -- well, let's wait till Shawn gets there.

MR. FISHER: This is Exhibit 2. Yeah. There we go. Perfect.

BY MR. FISHER:

Q So here you talk about varying degrees of gender dysphoria; do you see that?

A I do.

Q And I'm wondering, how do you determine degrees of gender dysphoria for a particular patient?

MR. SELDIN: Object to form.

A Well, I think that's one of the important aspects of my job. Right? So if someone has gender dysphoria, then -- then we need to know -- well, how is that affecting that person in their day-to-day life? Is it that, you know, a person

is uncomfortable wearing tight-fitting clothing and would benefit from maybe a compression garment for their chest? Or are they unable to leave their house? Unable to shower?

You know, that -- I'm trying to understand how the incongruence between assigned sex and gender identity -- whether that's causing them distress and how that distress is manifesting in their relationship with the world and with other people.

Q Okay. And I understand the different, I guess for lack of a better term, symptoms that you've described, with the clothing or being unable to leave the house.

But what do you mean there by "degrees"? Is one of those more severe than the other, or are they just different? Or how do you describe that?

A Yeah. So I would say that there's different severity of gender dysphoria. You know, an example that I could use is, you know, let's say someone has -- say someone has anxiety, for example. That's another DSM diagnosis. And then, you know, an adolescent with anxiety, they work with their parents, with their mental health

professional, and their doctor to create a care plan.

And let's say the child's anxiety is relatively low, you know. They might manage that anxiety by mindfulness or by avoiding things that make them anxious or by, you know, talking about their anxiety. Someone has more significant anxiety, maybe they would receive medication to treat their anxiety. With the ultimate goal of reducing the anxiety.

And so, you know, how the anxiety is then treated depends on the severity. There's multiple nonmedical and medical treatment options, and then you work with the adolescent and their family on figuring out what the right best next step is for treatment with the goal of reducing anxiety.

For gender dysphoria, I was sort of -- you know, I use that example to illustrate how gender dysphoria has various degrees of severity. You know, if a patient has gender dysphoria and that their gender dysphoria seems to improve with nonmedical interventions such as, you know, getting a haircut or using the name or pronouns that they -- that they've chosen to use or

wearing clothes that makes them feel more comfortable and then their dysphoria is more managed, then that's great. Then the goal of reducing gender dysphoria has been accomplished.

Now, if the person's gender dysphoria is more severe, and while nonmedical interventions may be helping, that's where we would consider medical interventions such as the medications that are outlined in my report.

Q Is it appropriate to use nonmedical interventions before proceeding to medical interventions?

MR. SELDIN: Object to form.

A Absolutely. I think that a lot of times patients that I see almost always have to some degree been treating their gender dysphoria with nonmedical interventions, you know. And so I think that in the course of treatment of gender dysphoria, nonmedical interventions are typically utilized before even seeing the doctor.

Q Well, do you see patients and say, well, we're not ready for medical -- "In my professional opinion, you're not ready for medical interventions yet. Let's try some nonmedical interventions"?

MR. SELDIN: Object to form.

A Yes, that's certainly happened.
Q All right. Let's -- so paragraph 31, you use another term, the second line. It says, "clinically important distress in the person's life." And I'm wondering what makes a patient's distress clinically important.
A Yeah. So I think that the DSM is trying to providing guidance on the diagnosis of gender dysphoria saying that there -- I believe the words are maybe "distress or impairment in." But I think the idea here is that not only do I have this feeling -- this negative feeling that we're calling gender dysphoria here, but also it matters for some reason. Right? That it's not something that I can just shrug off and move on with my day, that it's interfering with how I move about the world or, you know, affecting my grades or my relationship with my friends or my feelings of self-worth. It's contributing to my life in a negative way that makes my life not as good as if I did not have gender dysphoria.
Q Is there a way to -- I don't know -- score that distress to decide whether it's clinically important, or you just have to sort of know it when you see it, or how do you look at it?

A Yeah. I think that comes with experience of working with young people and talking about their life and their mental health, you know. So, for example, when I'm, you know, talking to a mental health professional that is taking care of a child that has been diagnosed with gender dysphoria, oftentimes they're reporting, you know, how that gender dysphoria is impacting that person's life, and so there's richness in that story, of course.
There are different ways that you can, you know, try to measure these things. You know, there are scales of self-esteem or depression and anxiety scales. You know, I think that the richness, though, of the biopsychosocial interview in understanding, you know, yes, I'm hearing you about your gender identity but what -- you know, how does that impact you on a day-to-day life?
Hearing from the patient, hearing from the parents, you know, building that relationship with the family to understand these challenging topics that help to understand if someone meets the criteria for the diagnosis of gender dysphoria.

Q Okay. So there -- and I just want to make sure I understand. You can have a sense of discomfort about your -- how your gender doesn't align with your natal sex, but that discomfort alone isn't enough to qualify you for the diagnosis of gender dysphoria?
MR. SELDIN: Object to form.
A That's right. So I think if we look, you know, at the verbiage of the diagnosis in the DSM-IV, I think you're describing, you know, Criteria A, that there's distress. Part B, which also is necessary to make the diagnosis, talks about the relevance of that distress.
Q I've gotcha. Okay. All right. So then in the same paragraph, I think, it talks about -- this is still 31 -- "Strong desire to be rid of one's primary or secondary sex characteristics, a strong desire to be treated as a member of the identified gender, or a strong conviction that one has the typical feelings of identified gender."
So I'm wondering about this idea of "strong." How do you measure strong feelings versus weak ones?
A Again, I think that's part of the biopsychosocial

interview. So if -- you know, if I'm -- you know, which is something that, you know, you're trained to do as a mental health professional as part of your job. But, you know, I would say the same way that someone would say, well, I'm kind of feeling like this versus I feel like this and it's really affecting me, you know. You assess these clinical criteria based on your interview with the patient.
Q So -- I don't know. I'm imagining some patients maybe they'll have a strong desire to be rid of secondary sex characteristics but not primary sex characteristics. Does that ever happen?
MR. SELDIN: Object to form.
A That could certainly be the case for a particular patient. I think when we're talking about these -- each of these lines here, I believe this is -- like, in part A of the DSM criteria, there's six sub criteria that need -- that two of them need to be met. So, you know, that doesn't necessarily mean that everyone has all of these features to meet criteria for gender dysphoria.
But, yes, someone could have a stronger -- could have stronger distress associated with secondary sex characteristics than primary sex

characteristics, certainly.

Q Would that patient be a good candidate for pubertal suppression or cross-sex hormones?

MR. SELDIN: Object to form.

A They certainly could if they met criteria for gender dysphoria and after, you know, review of risks and benefits with this particular patient, you know, that -- a patient like that could certainly benefit from intervention in your hypothetical.

Q My hypothetical, just so we're clear, being a strong desire to be rid of secondary sex characteristics but not a strong desire to be rid of primary sex characteristics.

A Right. So the desire to be rid of primary sex characteristics is not a required element of making the diagnosis of gender dysphoria.

Q And not just that, but of prescribing and being on pubertal suppressants or cross-sex hormones?

A Correct.

Q Okay. Do you have a general protocol that you use in your clinic for treating gender dysphoria?

A Yes.

Q What is that protocol?

A So in our clinic, a patient will oftentimes be

referred by their primary care doctor or a mental health professional. The next thing that happens is a triage phone call is set up with one of our mental health professionals and the parent. And the purpose of that triage phone call is to better understand why the referral was made. Right?

So that sometimes the referral is made simply because the parent is needing some resources to help with their child's safety at school. For example, their child is getting bullied, and they wanted to know how we might be able to help with that. And so our social worker might, you know, provide resources to that family to assess with that.

Other times they're looking for mental health resources in their local area, and so we can connect them with those services.

Sometimes the triage phone call elicits that the parent and patient are concerned that the patient does indeed have gender dysphoria, or maybe without using those words they're saying my child is really struggling with their gender identity, and that in that situation, the next step would be participating in an assessment

phase.

So in assessment, then, the patient would be seen by one of our mental health professionals, patient and family, to gather more information over time about the child's gender identity, also their social history, their family history, you know, getting a real -- a really comprehensive overview of what's going on with this child and family. The ultimate goal of that -- one of the ultimate goals of that assessment is to determine whether the child meets the criteria for gender dysphoria.

And then there might -- then at the end of that assessment phase, the mental health professionals will provide recommendations, recommendations to the family, you know; for example, you know, these resources might be helpful, you know. The recommendation also might be that, you know, seeing one of them -- the medical doctors on the team would be an advised next step for your particular situation.

If a medical visit is then set up, then myself or one of our other providers would see the patient and family and continue to gather history and learn about the patient's experience

with gender identity.

We'll have had the advantage of, you know, having learned a lot about the patient through reading the -- reading the assessment from our mental health provider and talking to the mental health provider about their experience with the patient and family.

And then in the course of that medical visit, discussions about medical interventions, and in thinking about those medical interventions, they're relying on guidance from the WPATH Standards of Care 8 and the Endocrine Society Clinical Practice Guidelines.

And -- and then if a patient is on some sort of medical intervention, then monitoring that patient over time and continuing to follow up with that patient through the course of treatment.

Q Does that break down into roughly four stages: Triage, assessment, medical, and then monitoring?

A I think that seems like a decent way to parse it out, sure.

Q Okay. And then the assessment phase, that is, as I understand it, what you referred to earlier as kind of the psychosocial evaluation, is that's

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what's going on there?
MR. SELDIN: Object to form.
A Yes. So I would say the -- I think how -- how our -- our social worker describes it as a biopsychosocial assessment --
Q Biopsychosocial. Okay.
A -- which is, I think, just a fancy way of saying learning everything there is to learn about this patient's understanding of gender identity and also getting a good sense of other aspects of their life.
Q How long does that process take, that assessment?
A So the first visit with the social worker is typically scheduled for three hours, and then based on that visit, you know, the social worker could determine what further visits are required for the assessment.
Q But it could be only one three-hour visit, and then it gets forwarded to you for a medical visit?
MR. SELDIN: Object to form.
A You know, it really depends. I think sometimes patients coming in already have had an assessment with a treating therapist that they've known for several years and are coming with, for example, a

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letter from the summary of the biopsychosocial assessment that's already been done by someone that's known them for a long time. So in that situation, oftentimes the one visit with our social workers is all that's required to sort of confirm. But in other situations, subsequent visits are necessary.
Q Do you have a sense for sort of an average?
MR. SELDIN: Object to form.
A An average number of visits with the social worker?
Q Yes. Before the medical visit.
A It's very individualized but, you know, somewhere between one and two visits on average.
Q Over how many weeks or months would those one or two visits likely occur?
A I think it's really variable. Right? So, like, for example, at an initial assessment visit with the social worker, the recommendation might be, you know, I want you to, you know, continue to evaluate and explore your gender identity working with, you know a local mental health provider for the next year. And then we'll set up a return visit.
Or it could be, you know, we haven't been

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able to go through everything that I wanted to go through to understand you so let's set up another visit at my next available appointment.
So, you know, I think it -- it's -- you know, I think that it's -- when we're dealing with individual people here in medicine, it's not so much, like, you know, triage, done; assessment, bing; visit, check mark. You know, every single person requires a lot of individual thought, you know. How can I -- what is this person telling me about themselves? How can I help them? And, you know, what are some barriers to care? What -- what is unique about this person that allows us -- that requires time for considering X, Y, or Z?
So when you say "protocol" -- right -- I can say that we have some sort of a protocol which involves those sort of four phases that you outlined. But beyond that, the protocol breaks down when you're talking about individual people and their specific needs.
Q Do you track data for how long people -- how long your patients take from triage through the medical visit?
MR. SELDIN: Object to form.

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A I don't formally track data, but, you know, I work there and can give estimates about how long things take.
Q So how long do you think it takes on average from triage to medical visit?
A Probably four to eight months.
Q Is it -- if there's going to be maybe -- strike that.
Do you ever prescribe either pubertal suppressants or hormones at the first medical visit?
MR. SELDIN: Objection to form.
A Yes.
Q Okay. So the monitoring, tell me about how frequently you are monitoring your patients where there's a medical intervention.
A Typically I see patients every three months.
Q Through their 18th birthday, or for how long?
A Every three months over the first year of treatment for sure. And then, like I say, because everyone is so individual and different, you create a plan as to what follow-up looks like moving forward.
So I have some patients that are, you know -- that are doing so well that our visits

are -- are relatively straightforward, and we might space their visit out to every six months after, you know, two or three years of treatment, other patients that we're seeing more frequently and keeping it every three months.

So it's, you know -- I find it helpful to set up an expectation for every three months, but then, you know, if someone doesn't require that, those every three-month visits, then the ability to space that out.

I'll follow patients usually past their 18th birthday. I think that, you know, this is a common problem in pediatrics. We don't want to get -- let go of our patients to adult care. And, you know, I think for, again, individual reasons there's different reasons why people might prefer to stay with the pediatric provider for a little longer versus going to their adult provider. Maybe they're finishing up college and then moving to a different city. So that's a, you know, relatively straightforward time to make that change. Other people who are kind of just, you know, maybe hanging around here, I might try to transition somewhere between age 18 and 21 to an adult provider in our community.

Q But do you think it's important eventually to transition them to an adult provider?

A I do.

Q Why is that?

A Well, one reason is that adult transgender individuals have more options for care. So in -- if you're a pediatric patient, there's only, you know -- there's limited access to gender-affirming care providers. And so if I kept all of my patients into adulthood, then there would be no availability for new pediatric patients.

But I think more importantly, pediatricians don't take care of adults in any -- don't take care of their patients all the way through their life for any medical problem, that when you're an adult, there's other things that adult doctors are better at than pediatric doctors. And so using their expertise is -- is just how medicine works.

Q For somebody who's experiencing gender dysphoria, what form might that take? What might that look like if somebody has -- is an adult and has -- I don't know -- issues that you don't feel equipped to deal with as a pediatric provider?

MR. SELDIN: Object to form.

A Well, of course, this isn't unique to just pediatric endocrinology or gender dysphoria, but I think adults have different problems than kids in a whole host of manners. So, you know, there's -- I think adult doctors are better than pediatricians at assessing and treating for sexually transmitted infections, for example, or counseling on breast cancer screening or prostate exams, you know.

I think that transgender adults are adults, and an adult wouldn't see a pediatrician for any of their medical problems.

Q When you talk about, though, transitioning your patients particularly for their gender dysphoria, are you talking about transitioning them to other endocrinologists that treat adults or just other practitioners?

MR. SELDIN: Object to form.

A So in our community there's a host of different providers from different specialties that have expertise in gender-affirming care. So in our community here patients may choose to see an adult endocrinologist, an adult gynecologist, family medicine doctor, internal medicine

doctors. There's high-quality experts in gender-affirming care in all of those fields in southeast Michigan.

Q What are you looking for in the monitoring visits?

A Well, I think that if I take a step back for a second, what is the goal of care? Right? When I'm seeing a patient for gender dysphoria or any medical problem, the goal is to improve the patient's health and quality of life.

With gender dysphoria specifically, you know, by improving gender dysphoria, my hope is that -- the ultimate goal is that the patient is living a happier, healthier, more successful life, more confident, more comfortable in their own skin, more comfortable in the world.

So ultimately the answer to your question is what are we monitoring? We're monitoring to see how that's going. Right? That if a treatment has been started, then -- you know, sometimes I say -- sometimes I say to patients, like, okay, the goal of testosterone for you. And their answer is, "I want my voice to be deeper because that's going to be make me feel more comfortable using my voice."

And I say, "Well, that's a good goal, but, really, my goal is that I want this intervention to help you to be the healthiest, happiest person that you can be." And that -- so I always kind of circle back to that.

So when I'm seeing someone back in follow-up, I -- the very first question that I always ask if someone's on treatment of some sort, for example -- well, the very first question I ask is to make sure that I'm addressing them using the correct name and pronouns, and then subsequently my next question is to ask them if they feel like the treatment that they're on is still something that makes sense for them to be on, is it something they'd like to continue.

Because with any medical intervention, that you make a decision at one point in time, and then you're constantly reevaluating that plan, whether you're starting a thyroid medicine or antidepressant at the subsequent visit. You're saying, "Okay. This was what our plan was at the last visit. How did it go since last time? Do you feel like we're on the right track? Is the treatment that you're on still helping?"

After that, you know, once we've established that continuing on a certain treatment is indicated, then my next question is, "Okay. Is the dose that I prescribed the right dose?" And so I think there's a lot of different factors that go into that question.

I think of it as sort of four things in treatment of gender dysphoria. One is are the changes that were expected and desired occurring. Number two is are the characteristics or physical changes that are undesired not happening. Right? So, example, menstrual periods for a trans man. Number three, is there anything that you've noticed taking the medication that you would not say is a positive? For example, acne, with someone on testosterone, is your acne getting hard to control. And number four is what do the blood levels tell us regarding your dose. So following labs, such as hormone levels and other metabolic parameters.

And using all of those four factors together, then using -- sort of using all of those factors to then say, okay, yes, we've established that we're going to continue treatment, and now do we need to adjust the dose or change how we're administering the medication in any particular way, and then at the end of that visit coming up with a plan.

The patient leaves with that plan, and then at the subsequent visit back to the start. Right? We left the last visit with the plan. How did it go in between visits? Do you feel like we're on the right track with our current plan?

Q Do you have any patients that tell you, "No, I don't want to continue with treatment"?

A I have had patients that have discontinued treatment before.

Q Do you have a sense for how many?

A You know, I can think of four or five. I think that, you know, a recent example of a patient that discontinued treatment, had started testosterone and had noticed on the testosterone a deepening of the voice and masculinization of the body. And at one of the subsequent visits, you know, as I am saying, you know, "What have you noticed since last visit," they said, you know, "I've noticed X, Y, and Z. I'm really happy with those changes, and I think that this is where I'd like to stay." And they said that,

you know, in the course of treatment with testosterone, they have a better understanding of their gender identity as nonbinary masculine.

So what that meant to them was they liked to -- they feel better presenting themselves as a masculine person but continuing to masculinize wouldn't cause -- wouldn't result in further improvement in gender dysphoria, that the treatment that had occurred up to this point was helpful, and that's where they wanted to stop.

Similarly to someone who benefit -- may benefit from social transition but doesn't require medical transition. Right? So, you know, I think that we can think of these gender-affirming care interventions as tools in our tool kit to address someone's gender dysphoria, but then constantly reevaluating, you know, where are we now? What are our subsequent goals? Do our goals today -- how do they align with our goals from the last visit? Have we achieved our goals? And, you know, let's make a new plan each time.

Q I'm going to switch gears now just a little bit. What is precocious puberty?

A It's puberty that begins at an age that's younger

than normal.

Q Is it the same thing as being transgender or having gender dysphoria?

MR. SELDIN: Object to form.

A It is not the same thing, no.

Q Is precocious puberty correlated with being transgender or having gender dysphoria?

MR. SELDIN: Object to form.

A Not that I'm aware of.

Q How is precocious puberty treated?

A Well, precocious puberty can be treated in a variety of different ways, but one -- one common treatment approach to treating precocious puberty is the use of GnRH agonists.

Q Okay. What does that do?

A So in our -- it's kind of -- puberty is a really fascinating endocrine process. Now you're getting me excited to talk about endocrinology for a second, so --

MR. SELDIN: Now, Mr. Fisher, you're going to want to hear everything about this so --

MR. FISHER: Uh-oh. I'm going to regret this. No.

BY MR. FISHER:

Q Go ahead.

A It's interesting because puberty is a process where all these systems in our brain are doing nothing throughout childhood, and then all of a sudden the hypothalamus starts making a hormone signal called GnRH, gonadotropin-releasing hormone, and releases it in pulses.

And the pulses of GnRH tell the next part of the brain, the pituitary gland, to make luteinizing hormone and follicle stimulating hormone, LH and FSH, pulses. And that LH and FSH then tells the testes or ovaries to make puberty-related hormones.

So how GnRH agonists work -- an agonist is something that is similar to. Right? So you would say, hmmm, GnRH agonist, wouldn't that make puberty happen more? But, no. If you're giving GnRH as a stable dose, you're interfering with the pulses, and you need the pulses for LH and FSH to be made in pulses.

So you're basically using a hormone that's currently already there, but instead of pulsing, giving a stable -- in a stable way, and that interferes with the production of LH and FSH. The end result being that you stop making puberty hormones from the testes and ovaries.

Q Is that the only treatment, the GnRH agonists?

A For precocious puberty?

Q Yes.

A No. I think -- well, you know, precocious puberty by definition is, you know, puberty in someone assigned female at birth prior to age 8, puberty in someone assigned male at birth prior to age 9. Not everyone with precocious puberty requires treatment, you know. If -- if, for example, someone assigned female at birth is 7 and a half and they're starting puberty, you know, you think, well, why would we want to treat? You could treat for social concern of starting puberty that young or to preserve final height, for example.

But oftentimes, you know, patients and families in discussion with their endocrinologist may decide, you know, we'll just let puberty happen a little early assuming that it's not being caused by some pathologic problem.

And, you know, in the past people would treat precocious puberty with other hormones like progesterone. But, you know, I think in terms of medical treatment, I would say GnRH agonist is the most common treatment for precocious puberty.

Q How early have you seen precocious puberty start?

A Less than 1.

Q And I assume in that context, it would be important to treat the precocious puberty with a GnRH agonist?

A Yes.

Q Why is that?

A Well, I think there's several reasons. One is that, you know, if you have -- let's say, for example, a 3-year-old, you know, if you have precocious puberty when you're that young, usually it's being caused by some other pathology, like a brain tumor or something like that. But, regardless, if you go through puberty at age 3, then you're going to go through a fast growth spurt. You're going to be the tallest 3-and-a-half-year old, an extremely tall 4-year-old. Then you're going to be done growing because you've already completed your growth spurt, and then you're going to be a very short adult. So going through puberty very young confers a risk for short stature.

I think also from social reasons, you know, being the only kindergartener that has completed puberty would be challenging from a social

standpoint.

Q Okay. Paragraph 36 in your report says, "Based on longitudinal data and my own clinical experience, when transgender adolescents are provided with appropriate medical treatment and have parental and social support, they are more likely to thrive and grow into healthy adults." And then you cite the de Vries study from 2014.

And I'm wondering, first of all, what you mean there by "appropriate medical treatment."

A I would say that I mean that when a person is assessed to have the diagnosis of gender dysphoria and counseled on medical options, that when the result of those discussions result in, you know, the treatment with medications such as GnRH agonists or gender-affirming hormones, that there's a favorable outcome compared to no treatment.

Q But, and then you say, "and have parental and social support." So I'm wondering if the likelihood of transgender minors thriving and growing into healthy adults is more dependent on the parental and social support or on the appropriate medical treatment.

MR. SELDIN: Object to form.

A You're wondering about that, or you're asking me what I think about that?

Q Yeah. Yeah. I'm asking. Yeah, that's a way of asking you. Is it more dependent on that?

A Oh.

Q Which is it more dependent on?

A Right. So, you know, I think that that's a question that requires a lot of careful investigation -- right? -- because we're trying to separate these two really important things.

So, you know, I think that we have evidence to suggest that both of those are very important. So, for example, on the parental and social support side, that data from Christina Olson, I believe, demonstrated that, you know, the -- for example, prepubertal children with a high degree of parental support and community support had similar rates of anxiety and depression as their controlled siblings, for example. Whereas the general population of youth that are transgender have worse -- or higher incidence of co-morbid mental health problems.

So that's just one example of a study demonstrating that, yes, parental support and social support have an impact on how a

transgender child is able to thrive, which I think also makes some intuitive sense.

Then, you know, what about medical treatment? How can we isolate that? Right? So I think that's a harder one -- right? -- because as we talked about, we can't do that randomized control trial with gender-affirming care either, that -- that for reasons that I mentioned before, you know, first of all, you wouldn't be able to randomize and blind the study. You couldn't assign people to pubertal blockers and no puberty blockers because people would realize that they're not on the real medicine because they're going through puberty.

And you can't expect people to sign up for a study that they don't believe has scientific equipoise, meaning that most people would think that participating in the treatment arm would be beneficial than the control arm, so no one would sign up. You wouldn't be able to see those patients across enough time to make the randomized control study meaningful.

So then we have to approach this question that you're asking in a different way. That, you know, we have other ways that we can investigate

scientific questions, such as a longitudinal study, such as retrospective studies, such as shorter, more discrete questions in a longitudinal study, like before and after one specific intervention.

And so those are the types of studies that help to inform the fact that, yes, appropriate medical treatment does have positive impact on people with gender dysphoria.

Q Paragraph 37 -- let's see. Oh, I see. Yes. It says -- so you want a comprehensive biopsychosocial assessment, which you mentioned earlier, first step, "performed by a provider with experience in gender identity."

How much experience in gender identity should a provider conducting a comprehensive biopsychosocial assessment have?

MR. SELDIN: Object to form.

A Well, I think that every mental health professional has a degree because they've gone through some sort of rigorous training program. Right? That with -- whether you're a social worker, a psychologist, psychiatrist, you know, as part of the credentialing that you receive implies that you've gone to a school that is

capable of licensing you in your field.

And so, you know, while I'm not familiar with all of the credentialing rules for different fields, that those rules are designed to imply that someone that's completed that degree has the skills needed to perform a biopsychosocial assessment of a person for any particular reason; that, I think, experience in gender identity, you think, I think that people gain that by, you know, reading, by reading articles in their field on gender identity, maybe by observing others, maybe by attending a formal course.

But I think that, you know, we don't -- there isn't a, you know -- a stamp of approval that you have, like, now I have -- I have enough experience in gender identity that I can diagnose gender dysphoria, just like there's not a similar stamp for a mental health professional to diagnose, you know, major depressive order.

I think that healthcare professionals are, though, however, trained to become competent in understanding how to use the diagnostic and statistical manual, and that skill certainly is helpful in gaining experience in making the diagnosis of gender dysphoria.

Q So is every medical health professional meeting the definition of experience in gender identity that you describe in paragraph 37?

MR. SELDIN: Object to form.

A I would imagine that not every healthcare professional would describe themself as experienced in gender identity, no.

Q Well, is that all that matters, is how they describe themselves?

A Well, I think if someone is saying that they're competent in an area of practice that they're not competent in, then that's a different problem altogether. Right? So if I was to start treating someone for Crohn's disease as a pediatric endocrinologist, you know, I can because I have a medical license, but I'm not a pediatric gastroenterologist, so I wouldn't really feel comfortable doing that. You know, could I open a private practice and treat Crohn's disease? Sure. But I don't think I would be very effective.

And so, no, there's no -- there's nothing that's legally getting in the way of someone with a certain degree of claiming to be something they're not. But I think from an ethical

standpoint, that if someone is diagnosing someone with gender dysphoria and writing in the letter that they're providing related to that assessment, that they have expertise in gender identity, then that's a part of the professional aspect of medicine that allows us to work together.

Q So you would expect that statement to be in some kind of a letter that you get from somebody who's done that assessment, that they state their background and make that representation that they have experience in gender identity?

MR. SELDIN: Object to form.

A I think different people do it different ways. You know, I think that in our clinic, we don't rely on letters so much because we have in-house assessment. I think other providers may use letters from mental health professionals. Others, you know, may set up their system of assessment in different ways. But it is a common approach to, you know, describe -- describe yourself and your practice when you're providing a letter regarding a certain type of care.

Q I've gotcha. So paragraph 57 of your report, and here we're talking about the initiation of GnRHa

which another term for that is puberty blockers I think maybe we've talked about. Is that accurate?

A That's right.

Q Yeah. So part of that -- so prior to the initiation of that, the providers counsel patients and their families extensively on the potential benefits and risks. And I'm wondering what the potential risks of starting puberty blockers is that you -- that's important for providers to counsel patients about.

A Yeah. So I think that the -- I think in order to frame that conversation, we have to just remind ourselves about the purpose of prescribing the pubertal suppression.

The purpose is that the patient is in puberty and that continued progression further into puberty has the potential to cause an increase in distress or worsening gender dysphoria and that the development of those secondary sex characteristics may make it more challenging for that person now and into the future.

So we're using the GnRH agonists to stop that progression. With any medication there's,

you know, potential risks. I would say that the most common adverse reaction that I see with GnRH agonists is pain at the injection site. I most often use injectable Lupron or leuprolide as a GnRH agonist. And so every three months the patient gets that medication administered intramuscularly, and pain at the injection site or sometimes local site reaction or bleeding can occur, that the -- the side effects of GnRH agonists, oftentimes you can think about it like, well, are the side effects of not going through puberty right now. Right? Well, not going through puberty is the intended effect, but puberty is more than just developing facial hair or breasts. Right? There's other things that happen during puberty, such as you go through a growth spurt.

So on GnRH agonists, someone will continue to grow. Every year a child gets a little bit taller, from 5 to 6 to 7 to 8, every year a little bit taller at a prepubertal speed. If someone's on GnRH agonists, they'll continue to grow taller every year, but it will continue to be at a prepubertal speed. That at some point that child will go through puberty, and at that

time they will go through their growth spurt.

And so we are sort of delaying the growth spurt. So I think that you could consider that a side effect. We don't need the person's growth spurt to be delayed. That's not why we're using the medicine. We're using it for delaying the development of secondary sex characteristics. But, consequently, we're also delaying their growth spurt.

I think in a similar way we think about bone density development. So every year a child's bone density gets a little stronger, and that would be occurring at a prepubertal speed. During puberty, whether it's puberty from testosterone or from estrogen, our bone density gets stronger faster. I sometimes call that the bone density spurt, in relation to a growth spurt.

And so if you're using a GnRH agonist, your bones are going to continue to get a little stronger just as they have been every subsequent year, but it's not until you go through puberty, either by discontinuing the GnRH agonist or starting gender-affirming hormones, that you'll have that bone density spurt. We're delaying the

bone density spurt.

That the -- I think a really important topic to talk to patients about is, you know, what we know and what we don't know about how gender-affirming care may or may not impact fertility.

So, for example, GnRH agonists themselves have no impact on fertility. Right? That if we think back to their use in precocious puberty, you hold off someone's puberty when it's time for puberty to commence. The medication is stopped, and so people treated with GnHR agonists have no difference in fertility as adults.

That being said, endogenous puberty to a certain degree is important for the ability to produce sperms or eggs using one's body. So that GnRH agonists themselves do not affect fertility, but if that person is going to go from GnRH agonists to hormonal interventions later in adolescence, then we still have not progressed into puberty far enough perhaps to have sperm or eggs available for use or preservation. That person will at some point need to go through endogenous puberty if they would like to attempt fertility.

So while GnRH agonists themselves don't impact fertility, I like to have conversations about that topic sort of earlier on in the process of talking about these medical interventions as we're sort of outlining sort of future goals -- potential future goals and plans.

I think that those are some of the major focus points that I discuss with patients with respect to GnRH agonists. But open to any follow-up there.

Q I'm wondering -- I think you maybe touched on this just a little bit, but I'm wondering in general or, I guess, maybe more -- actually not in general -- more specifically, are there ways that pubertal development will be different in a patient -- and here we're not talking about precocious puberty patients. I'm talking about gender dysphoric patients.

Pubertal development would be different in a patient after the patient started on puberty blockers?

MR. SELDIN: Object to form.

A Sorry. Can you -- I think you're trying to describe a hypothetical where you're -- are you starting GnRH agonists and then stopping them and

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allowing endogenous puberty?
Q Exactly, yes.
A Yeah. Yeah. Well, I think one question that a lot of people might ask is, you know, does puberty resume. Right? Is there a risk of puberty not resuming if you start GnRH agonist? And the answer is, yes, it resumes. By withdrawing from the GnRH agonists, that the pulse generator, you know, turns back on, and puberty resumes.

And when that happens, those signals start up again. Testosterone or estrogen rises, and puberty kind of continues from the place that it was at when it was stopped.

So I think in that respect I would say, no, I think that there isn't significant difference aside from age when -- if someone were to discontinue GnRH agonists and allow for endogenous puberty to recommence.
Q So no difference than if they'd just gone through puberty without any agonists -- GnRH agonists?
A Right. It's shifted in time but I -- yeah, I can't think of other significant differences in how their puberty would progress.
Q Do puberty blockers increase brain pressure?

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MR. SELDIN: Object to form.
A Generally, the answer I would say is no. You know, I think that there is a couple -- couple relevant articles regarding that question. I think you're talking about a phenomenon called pseudotumor cerebri.

So pseudotumor cerebri is basically an increase in intracranial pressure because you're making too much spinal fluid. So pediatric endocrinologists are really familiar with this condition because one of our other medications that we use a lot has had a known risk for pseudotumor cerebri, and that's growth hormone.

So one of the things that we've known about growth hormone is that a very, very small percentage of people but, you know, seemingly large enough to know that growth hormone can be a risk factor, have an increase in intracranial pressure usually within the first several months of starting growth hormone. And if that does occur, then we pause the growth hormone and -- usually that presents as a headache, that we pause the growth hormone, let the issue resolve, and then resume the growth hormone at a smaller dose.

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Now, I think it was a year ago or so there was a report that -- I believe it was six people in -- you know, of course, representing a very small fraction of the tens of thousands of people that have been prescribed GnRH agonists, but six people have been reported to have pseudotumor cerebri while also being treated with GnRH agonists.

I think sort of the implicit question is -- well, just like you've been asking me a lot -- is it cause or effect, or, you know, is it associated or causative? And while it's a little bit unclear, I think it was, you know -- you know, an important enough finding that the FDA announced that these six patients had this experience. I think -- I believe five of them were using GnRH agonists for precocious puberty and one for gender dysphoria.

Subsequently, I think there was a study in Sweden looking at all of the patients in their country on GnRH agonists, and they had zero people with pseudotumor cerebri and other people with pseudotumor cerebri, you know, for unknown reasons.

So I think it's a little bit unclear, but it

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is something that I mention to patients as sort of a question that has been raised. I think, regardless, I would hope that anyone that's experiencing a sudden onset of extreme headache would let me know and that -- that being said, I haven't had that -- I haven't had a patient that has had pseudotumor cerebri from GnRH agonists nor do I know of any colleagues that have had that occur. But I have had patients with this problem on growth hormone and feel comfortable in managing it if were to come up.

MR. FISHER: Okay. I think looking at my outline, I probably have a few more questions along this line, but let's go ahead and take a break, and then we'll come back.

I just don't think I'm going to get to any better breaking point in the next few minutes. So let's take five minutes, and we'll be back at 1:51.

(Recess taken from 1:46 p.m. to 1:52 p.m.)

BY MR. FISHER:
Q Doctor, do puberty blockers limit mental or emotional development during, you know, what otherwise would be a normal period of puberty?

MR. SELDIN: Object to form.

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A They do not.
Q Let's take a look at paragraph 64. Here we're talking about hormone treatment.
A Yes.
Q And the last sentence of the paragraph, over on page 17 -- there we go -- it says, "If starting hormonal care after completing puberty, discussion of egg or sperm preservation prior to starting treatment is recommended."
So here we're talking about your consultations with those with gender dysphoria who may be interested in hormonal treatment.
And so I'm wondering, why is that important, to recommend cryopreservation?
MR. SELDIN: Object to form.
A Yes. I'm happy to answer that question. But, I'm sorry, can you tell me which paragraph we're in so I can just keep up.
Q Yeah, sorry. Paragraph 64.
A Okay. Yeah. Next page. Yeah. Okay.
Q Yeah, it's just on the next page.
A Okay. Yeah, so, you know, I think as I was starting to talk a little bit about with GnRH agonists, that you need to go through a certain degree of pubertal development to make sperm or

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eggs, that when someone is starting gender-affirming hormones, you know, the goal of those hormones are to raise that hormone level up to what's normal for a person -- that person's age with sex assigned at birth, congruent with that gender identity, and lower the hormone levels that they're making down to what's normal for that person's sex.
And in so doing, there's, you know, considerations that we think about with respect to fertility. So if we take trans men as an example -- right? -- that someone's being treated with testosterone, we might expect the menstrual cycle to be suppressed. And so without having a menstrual cycle, someone is less likely to become pregnant. Less likely but not impossible -- right? Every day there's situations where even trans men on testosterone is -- becomes pregnant, but that -- it's less likely when you're not having a regular cycle.
That if someone down the road that has been on testosterone treatments says, "You know what? It's the time in my life where I'm thinking about my family planning options, and I think using my body to make a baby is what I would like to do,"

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then what that person would do is they would come off of their testosterone. They would wait for their periods to resume. And, you know, we do have some data to suggest that a large majority of patients will have resumption of their menstrual cycle within about six months of stopping long-term testosterone treatment, and then they can go ahead and attempt fertility. Of course, if they were unsuccessful, they could get help with fertility from fertility experts.
But, ultimately, there may be a subset of people that are not able to become pregnant or to harvest an egg for a pregnancy. You know, similarly, even cisgender women who never start testosterone, there's a subset of people that are not able to conceive or are infertile for some reason or another. There's some thought that testosterone may impact fertility in some people.
And so for that reason, you know, I think it's important to outline this for patients as they're starting testosterone and say, you know, while this is the -- "This is what we know about this topic. If you're feeling that a potential diminishment of your fertility is important to you, then another way to help preserve fertility

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options is to preserve eggs prior to starting testosterone."
I think I could, sort of, say the exact same thing, but in reverse, in talking about someone's decision to start estrogen and the decision to harvest sperm.
Q Paragraph 69. Let's see. Well, I thought I had the right one. I guess -- I thought it was in 69. I'm not sure if it is. Maybe it is.
But in general, maybe even if it's not right there, are you -- do you think that giving testosterone to a natal female who identifies as male is the same as giving that hormone to a male -- somebody who's a natal male?
MR. SELDIN: Object to form.
A Well, what do you mean by "the same"?
Q Well, are there -- are the risks -- risk and benefit profiles the same?
A Well, I think that we use testosterone in, for example, cisgender men typically for something called low testosterone, hypoandrogenism.
We're using testosterone in this context to treat gender dysphoria. But in both situations the goal is the same, to raise the -- sort of the immediate term goal or the physiologic goal is

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the same, to bring the testosterone level up to the normal male range.

So -- excuse me. So in that respect, it's similar. I think that, you know, the -- in other respects, it's similar because, you know, with a normal male testosterone level, whether you're a cisgender man or a transgender man, some of the goals may include, you know, going through sex typical puberty, masculinizing puberty, and having a normal male testosterone level is helpful for, you know, cardiovascular functioning and energy.

But, you know, there are some differences as well. Right? So, for example, a trans man on testosterone were -- may have -- may have a uterus, for example. And so when I'm treating a trans man with testosterone, one of the considerations is, you know, is the testosterone helping to also suppress the menstrual cycle? Because that's something that's commonly a source of distress for trans men. So that's one difference.

I think there's more similarities than differences. I think that when I'm -- when I'm thinking about some of the risks of testosterone

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treatment that I would talk about for both men and -- for both cisgender men and transgender men, you know, I -- I use the example of baseball players that abuse testosterone. Right? So a baseball player that's trying to hit more home runs, that person is not going to be trying to keep their testosterone level in the normal male range. They're going to be trying to put it at the superman level of testosterone. And that's not healthy for that person's blood pressure, not healthy for that person's blood sugar. And so that person is at risk for health problems related to excessively high testosterone.

So if I'm prescribing testosterone for, let's say, a cisgender boy who was born without testes or a transgender boy who's going through puberty now as an adolescent, then, you know, if the testosterone level is excessively high, then it needs to be reduced to prevent issues related to hyperandrogenism.

Q In general, do natal males, natal females process medications the same way?

MR. SELDIN: Object to form.

A I think to a large degree, yes. But I think that the -- sort of everyone's metabolism of

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medications is probably subtly different for all sorts of different reasons. And so, you know, I think that, you know, if we're staying on the testosterone example for a second, we know what the normal range is for -- for -- the normal range of testosterone level is for men. And so regardless of how someone is metabolizing it, if someone is a slower or faster metabolizer, the dose can be adjusted with the goal of maintaining a goal range.

Q Is that the only potential difference, is rate of metabilization?

MR. SELDIN: Object to form.

A Gosh, I -- I can't think of another difference that -- if you're -- you know, I would say that's the one that comes to my mind. But if there's something that you have on your mind, I'd love -- I'd be happy to elaborate on it.

Q You're giving me far too much credit, Doctor.

MR. SELDIN: He's trying to be helpful, Mr. Fisher, whether you believe it or not.

BY MR. FISHER:

Q So paragraph 81 of your declaration, you're saying -- this is kind of in the middle of the paragraph. There's a sentence that says, "Abrupt

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withdrawal of hormone therapy can cause severe physical side effects including hot flashes and headaches."

And I wonder how -- you know, what do you mean there by "abrupt"?

What time period is "abrupt"?

A Well, you know, I think, if we think about the example that I used, hot flashes and headaches -- you know, we hear the word "hot flashes" a lot. What does that really mean? I think it's a feeling of, like, discomfort and warmth through the body, oftentimes accompanied by a headache. And we hear it a lot in the context of menopause.

Really, a hot -- when I think of what I mean by hot flashes, it's those sensations that are caused by someone that has an estrogen level that's in the normal female range, and then all of a sudden it goes down to lower-than-normal female range.

And when that happens, you know, there's some discomfort associated in the body that oftentimes people describe as a hot flash.

Q Right. Well, and then in the next sentence, you talk about patients who are titrated down, and you mention that, well, you're going to see

physiological changes inconsistent with gender identity.

But when you talk about titrating down, though, how long does that take, to titrate down, so that you wouldn't have -- or, you know, be substantially less likely to have the hot flashes and the headaches?

MR. SELDIN: Object to form.

A I mean, I think -- I think in your hypothetical we're saying someone is being treated with estrogen, and the goal is to discontinue estrogen without causing physical side effects. So I would -- if that were a situation that was presented to me, then I would create a taper plan over the course of several months.

Q How many months?

A Gosh, I think it would probably depend on the dose that someone was on to begin with, but I think probably somewhere in the range of two to three months.

Q Two to three months. Okay. All right. Let's take a look -- so paragraph 35 of your report. Okay. So you say, "Gender dysphoria is highly treatable and can be effectively managed. If left untreated, it can result in severe anxiety

and depression, eating disorders, substance abuse, self-harm and suicidality," citing Reisner from 2015.

So let's take a look, then, at Exhibit 13, which should be this Reisner study.

(Shumer Exhibit 13 marked.)

Q Is this the Reisner study that you cite in paragraph 35 of your report?

A Yes.

Q All right. What is this study purporting to tell us?

MR. SELDIN: Object to form.

A So I think that the study is primarily included to just establish that the trans youth have disproportionately high degrees of some of these co-morbid health outcomes, such as depression, anxiety, utilization of mental health services, and things like suicidality.

Q What was the methodology of the study?

A It's a retrospective cohort study.

Q And what level of quality is that type of study?

MR. SELDIN: Object to form.

A So I think it depends on what you're using -- how you're using the term "quality." I feel like this is a high-quality study. If you're

referring to, for example, grade criteria, I think that -- that every study that's not -- and I may have this a little bit wrong. Every study that's not a randomized control trial automatically starts as low quality and then can be modified based on other factors like sample size.

So I don't know how a grade committee would grade this particular article in terms of quality. But as a layman's use of the word "quality," I think this -- this paper's quality in the fact that it, you know, looks at a relatively large sampling of transgender young adults and adolescents, that it has a decent attempt to include people of different races and ethnic youth groups, and that they're able to track some mental health indicators -- or assess mental health indicators that can be challenging to measure outside of sort of a large health system like Fenway Health here.

Q So this compared, I think it says, on the -- under the "Results" there --

MR. FISHER: Probably need to pull back a little bit there, Shawn. We can't quite see the whole page. There we go.

BY MR. FISHER:

Q Under -- yeah, under "Results" it says -- oh, now it got smaller.

MR. FISHER: There you go. Right there. Yep. On that front right there.

BY MR. FISHER:

Q It says, "Compared with cisgender matched controls, transgender youth had a twofold to threefold increased risk of depression, anxiety disorder, suicidal ideation," et cetera.

And so I'm wondering, is this -- does that mean that this is a retrospective study that compares only gender dysphoria -- people with gender dysphoria, comparing them with people without gender dysphoria?

MR. SELDIN: Object to form.

A This is comparing people with gender -- this is comparing people specifically -- all right. Let me make sure I'm answering your question correctly.

So it's comparing transgender patients --

Q Yeah.

A -- with cisgender matched controls.

Q Okay. So no comparison of treated or untreated gender dysphoria in this paper?

A That's right. So if we go back to paragraph 35 -- right -- the -- I think that's something that I'll point out here, is that the statement here, "Gender dysphoria is highly treatable and can be effectively managed. If left untreated, however, it can result in severe anxiety and depression, eating disorders, substance abuse, self-harm, and suicidality," you know, that -- those two sentences, my hope is -- is that those two statements are supported by sort of the bulk of paragraph -- or section C of the report, that this Reisner article, I think, is included here in the citation to establish the higher rates of some of these co-morbid mental health disorders but the fact that you're correct, in that this study specifically is not assessing a treatment, you know -- a treatment of gender dysphoria. It's establishing the -- the fact of the disparity in mental health in transgender people in the first place.

Q Okay. Let's go on to Exhibit 14 and paragraph 36 of your statement -- of your declaration.

(Shumer Exhibit 14 marked.)

Q Paragraph 36, "Based on longitudinal data and my own clinical experience" -- I think we've looked

at this a little bit before, but for this statement, "when transgender adolescents are provided with appropriate medical treatment and have parental and social support, they are more likely to thrive and grow into healthy adults," citing de Vries. So that goes to Exhibit 14, which should be that de Vries study from 2014.

It's called -- it says original identity of research -- no, not that one. It says "Original research - Intersex and Gender Identity Disorders" at the top. There's several de Vries.

There we go. Okay. So this is the de Vries study you're citing in paragraph 36?

A I think so. It's a little small. If we can zoom in a little bit.

MR. FISHER: You need to scroll up to the top to see the cite. There we go.

A Okay. I believe this is the right one.

BY MR. FISHER:

Q Okay. So what is this study purporting to tell us?

A Can you scroll down.

Thank you.

Yeah. So I think that this is not -- so there's a study that is -- I think the first one

that you pulled up was the one that I was intending to be -- is intended to cite here.

Q Oh.

A Can you go back to the blue one.

Q Okay. But let's just make -- I want to make sure I understand. Are you telling me that the de Vries 2014 study does not support your statement in paragraph 36?

MR. SELDIN: Object to form.

A You know what? I have to go back -- I'm trying to figure out which citation I'm supposed to -- is supposed to be here in 36.

But what is intended is there's a study sort of outlining the -- sort of the -- obviously, this author has several publications. Right? And so the longitudinal study that I'm discussing in 36 -- paragraph 36 has to do with sort of the follow-up of patients as, I think -- I want to say it's maybe between 40 and 60 of the first patients seen in the Amsterdam Clinic that were followed from before pubertal suppression through hormone care, then surgery, and then into young adulthood. That was -- that paper is the paper intended to be cited regarding --

Q Okay.

A -- the statement in 36.

Q So is that -- and I think the one that's up on the screen now is what I have marked as 15. Is that -- so is that the one?

(Shumer Exhibit 15 marked.)

A You know, I think so, but it's really hard for me to just have these flashes of papers and know exactly if it's the right one.

MR. SELDIN: Yeah. Tom, I just want to make sure we get it right because I think you said one was 2010 and it might have been the 2014 or vice versa. So I admit I'm a little lost about --

MR. FISHER: Well, we're looking at paragraph 36, and there he cites de Vries et al. 2014. That's what I was going by, and then in his bibliography that's the one that popped up, so --

A Yeah. We can't read this one to see what it's saying in the abstract.

MR. FISHER: Harper, do you have the full study?

MR. SELDIN: Hold on. I'm trying to look at the one he's got up.

A Okay. So thank you. I can see this better now.

Yeah. Yeah. So this is -- this is the

de Vries study that is the intended citation for 36.

BY MR. FISHER:

Q Okay.

A Yep.

MR. SELDIN: And this one is for 2014?

THE WITNESS: Yes.

A So the citation is correct in 36, but this is now the correct article.

Q This is now the correct study. Okay. All right.

MR. SELDIN: I think what Dr. Shumer is trying to politely say is he was right and you were wrong.

MR. FISHER: I know. You just had to put a fine point on it, didn't you?

MR. SELDIN: Well, Dr. Shumer's trying to be polite.

BY MR. FISHER:

Q Okay. So here we've got the -- so describe to me again. Let's just start over.

What is this study telling us?

A This is just a description of the longitudinal -- this is the description of patients seen in this particular clinic in Amsterdam. And, I think, this is sort of a unique study because it's

stretching out a very long period of time from -- looking at patients from -- that had received pubertal suppression hormones, surgery, and now are adults and just, you know, concluding that -- that their well-being was similar to or better than same-aged young adults from the general population.

Q So this is a -- I think as I understand it, a follow-up study, if I've got this right, that began in 2011?

A Well, you know, I think that that's possible. I think that the patients that were described in this study began being patients way before that and maybe have been described in other -- other articles as well. But I think that this particular article is sort of the longest term longitudinal study published by this particular group.

Q But the cohort -- in any event, the cohort size here is only 55, right?

MR. SELDIN: Object to form.

Q 55 young individual adults?

A This is a -- this is a report of 55 individuals. That's correct.

Q Is there a control group to compare?

MR. SELDIN: Object to form.

A So there's not a formal control group. Right? This is, you know -- this is basically looking at the outcomes of this cohort over time. You could think, well, what would the control group be? Right? You would say the implied control group is untreated transgender individuals.

And so, you know, I think that the reason that this paper is so, you know, interesting to me is that just living in the world today, we know that transgender individuals oftentimes do really struggle, really struggle with respect to not fitting in, in the world, feeling persecuted or discriminated against, feeling depressed, feeling anxious, having significant gender dysphoria, that against -- it's against that sort of bleakish backdrop that we're hearing that the well-being of these people was similar to or better than same-aged young adults from the general population.

So, you know, the implied control group is the general population. So, I mean -- sorry. They're comparing this group against the general population and to say that their well-being is similar to or better than the general population,

compared to that sort of implied control group of we know that transgender people generally would not be described as a population of having well-being similar to or better than the general population, that that's what makes this paper interesting.

Q Well, to be clear, this paper itself doesn't make that -- that claim, that comparison? It only compares to the general population? It doesn't compare to a group of untreated transgender adults?

MR. SELDIN: Object to form.

A Well, I'd have to go back and read the paper, but I would imagine that in the introduction, the authors must describe in some detail that people -- that transgender individuals historically have not had well-being similar to or better than the general population.

So -- so that was sort of the -- that the results found that these individuals do, you know, is why this paper is relevant.

Q Let's take a look at page 702 of this report. Just at the bottom left, it says 702.

MR. FISHER: There it is, good.

Q So that text right above the table -- so it says

here, these individuals, the -- which I understand that to be describing the cohort included in the study -- "These individuals of whom an even higher percentage than the general population were pursuing higher education seemed different from the transgender youth in community samples with high rates of mental health disorders, suicidality, and self-harming behavior and poor access to health services."

Does that give you any concern about how representative this study is of the general -- when it talks about, you know, comparing this cohort to the general population?

MR. SELDIN: Object to form.

A So I want to back up for a second and say that they're not saying that in choosing these patients to participate in the study initially they were pursuing higher education at higher rates. Of course, they were young adolescents. Right?

So what they're saying is the patients that participated, that they're describing in this study, are going on to have -- what I think they're implying -- is successful lives and saying that this seems different than the youth

in community samples with higher rates of these other problems.

This is something that I get to witness every day too, where, you know, oftentimes patients are coming to see me with, you know, parents feeling sort of hopeless, that there's no -- there's no future in sight and, you know, as I'm -- as we talked about graduating these kids to adult care, I do have that privilege of watching them, you know, successfully adulting in ways that we didn't -- that maybe their parents couldn't envision a few years before.

So I think that's what these authors are describing, that sort of phenomenon of, wow, our patients are doing well, they're going to college, they're getting jobs. Kind of in contrast to sort of what we're seeing from -- because I think that sentence is sort of read out of context there.

Q Oh. Well, let's look at page 703. Right above "References."

A Okay.

Q "Third, despite absence of pretreatment differences on measured indicators, a selection bias could exist between adolescents of the

original cohort that participated in this study compared with nonparticipants."

Does that give you any concern about the results -- the reliability of the results here?

MR. SELDIN: Object to form.

A Yeah. You know, this is just an aspect of research. It gets messy because we -- you know, because we can't do a randomized control trial, then we need to be creative about how we can attack these specific issues.

So if we are saying, okay, how do patients do over the long term with this type of care, how are we going to conduct that study? Okay. We need to conduct that study at a place where people go to receive this care. Right? So you couldn't do this study without doing it in a medical center that is doing the care.

So inherent in that is the idea that, well, not everyone's getting care. Right? If you're -- if you're farther away from Amsterdam, maybe you're less likely to get the care. If you don't have a car or maybe, you know, have -- have parents that won't bring you to the clinic, maybe you won't get the care.

So those -- you know, so then the next

question is, okay, so if we did this same treatment to kids that weren't able to get the care for one reason or another, would we have the same results? And so that in the -- in the limitation section here, that's what the author is asking the reader to think about. Right? Would we have the same results if we did this study on all the people that didn't have a car back in 1990 to get to these clinics or didn't know -- their doctor didn't know about the clinic existing?

And I think that that's left for the sort of contemplation of the reader -- or the common sense or the clinical sense of the reader to say, again, how generalizable is this to me, to my practice?

So to me, you know, these patients are not exactly the same as the patients that I'm seeing in the office. They live in Michigan, not Amsterdam. It's 2023, not 1990s. So those are differences.

Are those differences relevant? Maybe. Does this paper still help to inform me that gender-affirming care might be helpful? I think it does.

I think that this is -- you know, this is just the nature of research. The limitation is that the study wasn't done on your patient. Right? And you have to extrapolate from what's learned from others on to your own patient.

Q Is it your understanding that all of the participants in this study were getting psychiatric support?

MR. SELDIN: Object to form.

A Yes.

Q Does the study purport to control for psychiatric support in any way?

MR. SELDIN: Object to form.

A So the study's describing this particular clinic experience with their care, which they, I think, do a very nice job of describing what that care is. It involves psychological support, gender-affirming care.

And so, you know, again I would go back to the same thing I just said. If I'm working in a place where there is not available psychiatric support or psychological support for patients, then I might say, hmmm, how am I going to use this study? Is it generalizable to me?

It looks like these patients, they improved

with this package of psychological support, gender-affirming care, you know, seemingly supportive environment, and their outcomes were good.

Unfortunately, you know, me as a hypothetical person, unfortunately in my situation, I have something that maybe is similar to their psychologic support. They have a therapist, but it's not exactly the same as, you know, what they're describing they did in terms of psychological support. So is this paper generalizable to me?

And so, again, I think that goes back to -- back to the clinical sense and common sense of the reader, that without providing that psychological support, would the treatment that I'm proposing -- or without providing psychological support exactly how it's outlined in Amsterdam, does my -- would my treatment result in similarly favorable outcomes?

And so, you know, I think that, for the most part, providers of gender-affirming care today, the takeaway here is that, yeah, you don't give gender-affirming care, such as GnRH agonist or gender-affirming hormones, in a vacuum; that, you

know, you don't give people medication and say, "Well, hope things go all right. Let's never talk about this again"; that you're also advocating for the patient to be well-supported, supported in their family, supported in their school, to connect with mental health professionals, to help them -- help their journey.

So how I would, I guess, answer your question is it seems like, you know, we have some pretty compelling data to say that this model of care works. So how -- how can I best replicate that using the resources that I have?

Q And is it proper to infer causation from the medical interventions on this -- based on this paper?

MR. SELDIN: Object to form.

A Well, I think that there's some compelling reasons to -- and for some causation -- right -- that there's -- you know, I think that the authors do a nice job of describing, you know, the intervention that they received, that there's -- you know, that there's an outcome that is quite different from what's expected based on the general population. So then if you're

thinking about, okay, what's the causation? All right? So it could be -- it could be this package of care. Right? That could be one of the causes.

Now, in order to dispel that theory, I need to think about, well, what are other potential -- potential causes for these people doing so well compared to the general trans population. Could it be that their situation is somehow very different from those in the general population? Is there some -- you know, is this -- do I buy that there's a significant, you know, selection bias?

You know, I think that you can't -- you can't ever, you know, assume 100 percent causation in this type of study design, but I think the authors do a pretty nice job of, you know -- of explaining why causation should be considered.

And, you know, when I read this study, the conclusion that I reach is that, gosh, it seems like these patients are doing quite well after this intervention. It's nice that they were also involved in this really seemingly well-run clinic. And so, you know, while I -- while I

endeavor to provide high-quality care, let me learn from their experience in applying that to my own patients.

Q So did the authors use the -- what I think is sometimes referred to as the UGDS, the Utrecht Gender Dysphoria Scale?

MR. SELDIN: Object to form.

A I believe so.

Q Are you aware whether they switched the version, male to female and female to male, after the transition interventions?

MR. SELDIN: Object to form.

A You know, I have heard sort of this question raised about this paper before, and I'm not exactly sure that -- I don't want to make a mistake in answering it. If there's a part in the paper that is relevant to pull up, maybe I can review it with you in more detail.

Q Yeah. I'm really just asking about awareness. You've heard it. I've heard it. I don't know that there's anything in the paper that tells us exactly. I just wondered if you were aware of that or had any information about that.

MR. SELDIN: Object to form.

A Yeah. I'm not sure that I have -- that I'm the

most eloquent in sort of feeding back your -- you know, opponents' talking points about this particular problem. But I think it has something to do with, you know, after transition, that, you know -- so, first of all, what is the Utrecht Gender Dysphoria Scale? It's a pretty simple tool that is, you know, basically asking questions like this is how I feel about my chest, about my face, about my body.

And my understanding is that there's sort of a version that is designed to be asked to people assigned male at birth, people assigned female at birth. And so I think that the -- you know, I think in the beginning -- right? -- the Utrecht was presumably asked of people using the -- the version that's according to their assigned sex. And then subsequently, after transition, the question is, well, which version of this do we use? Right? You know, I think -- I think inherent in that is, like, well, what's the difference? What are we talking about here?

And I think that the point here is that there's an effort to try to quantify something that's hard to quantify, which is sort of what you've been asking me about, right? How do we

quantify gender dysphoria? That's hard.

So I think the Utrecht Gender Dysphoria Scale is an effort to try to quantify gender dysphoria. It's not perfect. I don't think that many people use it. But, you know, I think that people are picking out this question about which form was used to -- on which patient at which time.

To me, I think that sort of misses the point, that, you know, the primary outcome of this is -- is, you know -- is well-being which, you know, they describe how they measure it in lots of different ways.

So, yeah, I think that it's an interesting question. How -- what version of the Utrecth Gender Dysphoria Scale would you use before and after transition? You know, I don't really have the answer. But I guess that's to say I'm aware that this question exists, but I'm not sure that it's -- that it's something that makes me feel feelings one way or another in general about the study as a whole.

Q Okay. So I think I want to go back to Exhibit 14, which might -- it's hard -- there it is. The date is in the lower right. There it

is. So this says 2010.

I guess I'm -- my understanding is that this is the original de Vries, and then what's at Exhibit 15 is the follow-up study.

Do you have enough familiarity with this to tell me if you think that's true?

MR. SELDIN: Object to form.

A So this is the 2010, right?

Q Yeah.

A Yeah. So what was your question?

Q I'm wondering if this is -- if I'm right in saying that this is the study that -- you know, the de Vries -- first de Vries study published with this cohort, and then the 2014 that we just looked at is a follow-up of this same group with fewer participants.

A Yeah. You know what? I'm not -- I'm not sure.

Q Okay. But are you familiar with this paper generally?

A Yes.

Q And, again, what is this paper telling us?

A So this is more of trying to assess shorter term measurables at different time points. And I think -- if you just give me a second, I can take a quicker look here.

Q Sure.
A Can you zoom in just a smidgen.
Okay. Got it. I can answer your questions now.
Q Okay.
A So what was your question?
Q Yeah. I haven't -- there isn't one on the table. I'm sort of looking at it to see what I want to ask you about it.
Okay. So we have 70 participants in this study; is that accurate?
A Yes.
Q And what ages were they?
A Well, they were -- in the introduction, in this abstract they say, you know -- this is a paper about GnRH agonists specifically. Right? So we're talking about early adolescence. You know, they're saying 12 to 16 is the common age that they're using GnRH agonists. Now I don't know if all the patients in this study are between 12 and 16, but basically they're patients that are being treated with GnRH agonist in early adolescence -- early adolescence. Excuse me.
Q Go ahead.
A Oh, that's it.

Q Okay. And what was the result of the study?
A Well, they're trying to isolate the effect of this one intervention itself, GnRH agonists. Right? And so, you know, in the last -- in the last paper that we were discussing, that's really sort of like, okay, we have transgender young people at this end, and then we follow them all the way to this end, you know, 20-odd years later.
This is a much shorter study. So, you know, I think as I was describing that study, I was like, okay, well, there's a lot -- and as you pointed out too -- there's a lot going on there. Like, these people went through a lot of different interventions, and, you know, how do we know what's causing what?
I think this is sort of, like, trying to get to some of the heart of that because, again, we need to approach these challenging topics from a variety of different angles.
So this is saying, okay, from before you start GnRH agonists to right before you start hormone treatment, let's see how people score on a variety of different scales. And in so doing, what we're hoping for is to isolate the effect

of -- what we're trying to do is trying to isolate the effect of the intervention GnRH agonists.
So in this study some of those things that they measured seemed to improve, and others were not changed from the time before starting treatment and right before starting hormones.
So, for example, the behavior and emotional problems, depressive symptoms decreased. However, body satisfaction did not change. Right? So, you know, I think -- I think that's kind of an interesting study, you know. We're trying to say, okay, what does -- what does -- what does GnRH agonist potentially do in the treatment of gender dysphoria as part of that bigger picture that we -- you know, if we -- if we agree with the findings of the previous study, what is it about GnRH agonist that seems to be helpful as part of that care package?
And, you know, I think if I was just to think about it logically, you know, if someone is starting puberty and they're seeing their body start changing in a really -- in a way that's making them feel very distressed and nervous, in a way that is not looking with their gender

identity, that might make someone really depressed, really anxious, have decrease in general functioning.
And so if you were to say, okay, I get that you're really, you know, doing poorly with the onset of puberty, let's stop puberty, you might say, okay, I might expect that person's distress around the continuation of puberty to get better and their general functioning to get better.
But they still have a body, a gender identity that doesn't match their assigned sex at birth. So that body satisfaction didn't change, but some of the distress around going through puberty gets better. Right? So it's interesting.
You know, I think that that sort of helps me to understand, you know, how someone that has gender dysphoria to the degree that they go on to GnRH agonist and then subsequently start hormones -- how I might counsel that patient, you know, in sort of setting expectations that, you know, I -- that we're, you know -- if I'm seeing someone -- if I'm thinking about this study specifically and approaching a patient that is, say, 12, at Tanner Stage 2, considering

gender-affirming care with GnRH agonists, and I'm hearing from the patient and the parents that the patient is really distressed and depressed and not going to school and they are really -- they really hate their penis and they have thoughts of, like, cutting off their penis and -- and that we're talking about the risks and benefits of GnRH agonist, I might suggest, based on this paper, that, you know, the GnRH agonist will stop that process of continued mas- -- the continued masculinization, that if there's some degree of depression or anxiety that you're feeling because your body is starting to masculinize, my hope is that -- and my expectation based on the literature is that that may improve. But your feelings about your body parts that you hate, that you want to cut off, that may not improve with GnRH agonists.

Q So do you have an understanding about how the demographics of the youth that were studied in this study compared to the demographics of the youth that identify as gender dysphoric today?

MR. SELDIN: Object to form.

A Well, I think there's a lot of differences between then and now. And so I would say that I

have some familiarity with that subject, yes.

Q And what's your understanding of how the demographics compare?

A I think there's more people today that are seeking care for gender-related concerns than there were when this paper was written in an era where there were no services for gender-related care.

Q What's the demographic makeup look like? I mean, there are more people, but is the demographic makeup roughly the same, or is it different?

MR. SELDIN: Object to form.

A Well, I think that there's a couple differences from the description of these patients to the patients that I see in clinic that I can review with you. You know, I would say that in -- in our clinic today we're seeing, you know, maybe a third of patients presenting in earlier puberty, about two-thirds presenting in later puberty, and we're seeing a higher percentage of people assigned -- assigned male at birth -- assigned female at birth compared to assigned male at birth, and that the -- you know, the general numbers of people presenting to care is higher -- there's a higher prevalence of presenting to

gender-affirming care than when the study was published.

Q What percent of your patient population of those with gender dysphoria are natal females versus natal males?

MR. SELDIN: Object to form.

A I don't have an exact breakdown for you, but I would say 65 percent.

Q Okay.

MR. FISHER: So I think it might be a good time for a break. Just five minutes, everybody. Is that all right?

MR. SELDIN: Sounds good.

(Recess taken from 2:51 p.m. to 2:54 p.m.)

BY MR. FISHER:

Q Doctor, let's turn to paragraph 72 of your declaration.

MR. FISHER: So, Shawn, if you could make that just a little bit bigger, please.

Thank you.

BY MR. FISHER:

Q So here you say, "Review of relevant medical literature clearly supports the benefits of GnRHa treatment on both short-term and long-term psychological functioning and quality of life."

And so -- and then you cite several studies.

So I want to go through those studies now. And let's start with the Turban study that you site there, Turban et al., 2020b, and this is going to be Exhibit 16.

(Shumer Exhibit 16 marked.)

Q Doctor, do you recognize this study?

A Yes.

Q Okay. Is this the study that's cited -- the Turban study cited in paragraph 72?

A Yes.

Q Can you just summarize what this study purports to show us.

MR. SELDIN: Object to form.

A Yep. So this is, you know, again, trying to attack that question, what is -- what are each of these -- how do each of these aspects of care impact health outcomes. And this one is specifically trying to address that question from the standpoint of the pubertal suppression.

And so, you know, in this particular situation we're looking at, I believe, again, results from the 2015 U.S. Transgender Health Survey and asking the question to adults, you know, did you or did you not receive pubertal

suppression? And then finding out if there's differences between people that answered yes or no to that question.

Q And what -- what did it find? What are the findings?

A So there was lower odds of lifetime suicidal ideation for people that were -- that received pubertal suppression.

Q We talked about this -- I think this report or at least this survey a little bit earlier in your testimony. Do you remember that?

A I do.

Q Okay. Do you in your practice -- I think you mentioned -- and I just want to make sure I understand -- that do you find that this survey and then the studies that depend on the survey results are generalizable?

MR. SELDIN: Object to form.

A Yeah. So I think, again, generalizability of any study, you have to put it in context. How does this relate to the patient that I'm treating today?

So I think in this particular study, you know, what the author is trying to do is, you know, again answer a very challenging question.

How does GnRH agonist affect lifetime suicidal ideation? Of course, not something that you can measure very easily with, for example, a randomized controlled trial. Like, these people get it; these people don't. Let's see in 50 years how many people committed suicide -- or contemplated suicide. Impossible study to do.

So to attack that question -- you know, I think that the kind of unique thing about this study and studies based off that survey is just the sheer number of people that, you know, while you can say that not being a prospective randomized controlled study is a limitation, one of the -- one of the reasons that the study -- in favor of its generalizability is the sheer number of patients -- or number of people that were included in the study. This is why cross-sectional survey data can sometimes be very powerful.

So, you know, in terms of generalizability, again, how I interpret that word is if I'm seeing a patient and we're thinking about GnRH agonist, does this study help to inform me about whether this patient would benefit from it.

So I'm thinking that I need to know a lot

about my patient to answer that question. You know, is my -- does my patient have gender dysphoria? How is that gender dysphoria manifesting? But, you know, if I feel like that patient is, you know, otherwise a candidate for gender-affirming care with GnRH agonists, I think this survey is helpful because it provides, while not perfect, some interesting information about the lifetime suicidal risk of patients that were and were not prescribed this medication.

Q Have you gone back to review the survey results themselves, or have you only read the papers that are based on the survey results?

MR. SELDIN: Object to form.

A Yes. So the -- we've been talking about the survey a lot so I'm not sure if I'm getting the name exactly right -- I intend to -- but the U.S. transgender health survey that we've been talking about --

Q Right.

A -- is -- yes, I have read that report.

Q So you're familiar with that part of that report there where it says "Although the intention was to recruit a sample that was as representative as possible of transgender people in the U.S., it is

important to note that respondents in this study were not randomly sampled, and the actual population characteristics of transgender people in the U.S. are not known. Therefore, it is not appropriate to generalize the findings in this study to all transgender people." Are you familiar with that statement?

MR. SELDIN: Object to form.

A Yeah, I think you were just reading directly from the U.S. Transgender Health Survey; is that right?

Q That's right.

A Yes, so I am familiar with that statement.

Q Okay. And then I think earlier you also mentioned that this survey was affiliated or was somehow reported on by the Williams Institute. Does that ring a bell?

A Yes.

Q Do you remember that?

A Yes.

Q Okay. And so the Williams Institute has a statement about suicide thoughts and attempts among transgender adults from the 2015 U.S. Transgender Survey. Are you familiar with that report?

MR. SELDIN: Object to form.

A I'm not sure I know what you're talking about.

Q So the transgender survey that was published by the National Coalition for Transgender Equality; is that right?

A I believe so.

Q Do you know anything about the National Coalition for Transgender Equality?

A I'm not extremely familiar, but I understand that it's a group that, you know, is working to make healthcare better for transgender people.

Q And do you understand that it is an advocacy organization?

MR. SELDIN: Object to form.

A I'm not sure exactly all the functions of this particular organization. I'm sure advocacy is part of its mission. Advocating for the health of transgender people seems to be -- seems to be the thrust of why a survey of transgender health would be needed in the first place. So that makes sense.

Q Do you understand the authors of the U.S. transgender survey to have been trans advocates?

MR. SELDIN: Object to form.

A I don't know -- I'm not sure what a trans

advocate means, but I'm happy to review a definition.

Q So in this Turban study that we've got up -- so are there risks of inherent biases in this study and its results?

MR. SELDIN: Object to form.

A Similarly to all studies, there's risk of inherent biases, so yes.

Q Are you aware of reviews that criticize Turban's study -- this particular study?

MR. SELDIN: Object to form.

A I want to answer your question correctly. I have seen critiques about, I guess, studies based upon the U.S. transgender health survey in general, but I'm not sure if I've seen specific to this particular study.

Q Are you familiar with the criticism that the transgender survey from 2015 suffers from convenience sampling?

MR. SELDIN: Object to form.

A I have heard some critique along those lines, yes.

Q Are you familiar with the critique that participants were recruited by transgender advocacy organizations?

MR. SELDIN: Object to form.

A Yes. While I've heard some of these critiques, I don't think that they're -- they're extremely helpful or valid critiques. I think that when we're trying to find tens of thousands of transgender people across the country, that you need to go where the transgender people are. Right? So this type of recruitment is not unique to the U.S. transgender health survey, that large surveys of maybe hard-to-find demographics, you know, use these type of recruitment strategies all the time.

That, you know, if you wanted to conduct, for example, a survey of American Sikh people, you might, you know, start by saying, okay, where would I find American Sikh people? Maybe in their temples. Let's post flyers in their temples. I want to find as many as I can from across the whole country. All right. Maybe the ones I find in the temples, maybe I tell them if they know any people that are Sikh, that there's a study, that we want to include everyone possible in your religion in this study. Maybe I'll post on online boards that people with that religion tend to frequent, with the goal of

trying to get as robust and diverse a sample as possible.

So that's how -- that's how oftentimes these large surveys are conducted. Then the question is, okay, well, who could we be missing? Right? Who could we be missing? And, you know, could we be missing people that are in rural America? Maybe. You know, are we capturing -- is there an ethnic group that we're not capturing because they're not in our catchment with our current recruitment strategy? So then our recruitment strategy can change and say, okay, we think that we're underrepresenting this area, so let's focus on that.

So this is very different than, you know, random sampling of people. Right? This is -- this is how this type of research is conducted. So it's perfectly fine to have criticisms of that kind of research, but it's certainly not unique to transgender questions. It's how, you know, large population data needs to be conducted when you're trying to include as many people as possible in a survey like this.

Q How would this survey account for any representation by the population whose earlier

gender dysphoria was alleviated through cognitive behavior therapy? Are those individuals represented in this survey?

MR. SELDIN: Object to form.

A I would suggest they're probably not because the people that are intended to fill out the survey are adults that identify as transgender. So if there's a hypothetical person who had gender dysphoria and then that resolved due to this type of cognitive therapy that you're describing and they no longer identify as transgender, then that person would be unlikely to identify as transgender, which I think was the inclusion criteria for this survey.

Q Are you aware whether this study controls for psychiatric co-morbidities?

MR. SELDIN: Object to form.

A The survey or the study?

Q Well, either one.

A So there's -- the survey wouldn't control for anything because it's a survey of all the people that we can find across the country that are transgender. So you don't control when you're recruiting for a population-based study.

What you can do is you can use the responses

to answer questions, and the responses can serve as controls. Right? So if you're saying, you know -- let's say we want to know if people that live in Kansas in the survey are more or less depressed than the people that live in Missouri. Then you would control by state and then assess for depression.

But going into the study, you don't control for anything because it's a population-based survey.

Q Okay. Well, does Turban control for co-morbidities when he analyzes the data?

MR. SELDIN: Object to form.

A Well, the -- this particular paper is asking about a lifetime -- lifetime risk for suicidal ideation. Right? So I'm trying to understand your question.

So for your question to make sense, I think you're asking if patients -- if there was a difference in depression in childhood, in people that were and were not offered pubertal suppression; is that right?

Q Yeah. I'm just trying to figure out, you know, if we know what led to any particular outcome, whether it was dysphoria and treatment or whether

it was some independent psychological co-morbidity.

A Gotcha. So, you know, I think not exactly. I mean, the -- again, the author is using -- using their experience with thinking about research when trying to ascertain that. Right?

I think that what Turban is able to say is that there is this -- in this large group of people, you know, basically he can say the following: That people were asked this one question. Some people answered it one way. Some people answered it another way. There was another question in the survey. Some people answered it one way. Some people answered it another way. Let's compare.

And so, no, there's not -- this is not a randomized control trial. You can't control for all these variables. You've got to use your brain and say, okay, are there other things that could bias this? And maybe there are.

And so when I'm looking at this, I say, well, I can't think of reasons that, you know, one group should be different than the other, people that -- that put "yes" for they've had suicidal ideation versus another in their

access -- their ability -- in -- if there's a difference between them in terms of accessing pubertal suppression. I can't think of a reason that there should be some other variable that's the cause.

But, you know, we have improvement with this paper. So I think with that in mind, then I say, okay, how much do I value this paper as part of the medical literature? I would say I do. I think it's a large paper that has a pretty significant result.

Q And I'm wondering about a couple of -- a couple of aspects of those who are included in the survey, one of which is was there -- does this paper or the survey it's based on reflect any effort to detect potential false subjects?

MR. SELDIN: Object to form.

A Can you define what a "false subject" is.

Q Well, somebody who's posing as an honest person who has, you know, straightforward answers to these questions versus somebody who's just, you know, deciding to fill out a survey under, you know -- you know, just to load up the data that corresponds to a particular set of responses. It's not an actual person. It's just a person

who's filling out, you know, response after response after response and thereby loading up the data.

MR. SELDIN: Object to form.

A I haven't really considered that as a concern. As fun as surveys are, I don't think many people would just fill it out for -- for fun. But I'm not aware of whether there's any efforts. If there are, you know, I don't remember.

Q And, of course, anyone who was treated with pubertal suppression who went on to commit suicide would not be accounted for in this study?

MR. SELDIN: Object to form.

A Yes, I would agree that people that have died by suicide would not be included in this study whether or not they were given GnRH agonist.

Q I'm wondering about the most seriously mental ill people who would, you know, be diagnosed with gender dysphoria. Would they be denied puberty blockers given the seriousness of their mental illness?

MR. SELDIN: Object to form.

A That hasn't necessarily been my experience. You know, I think that if you -- if we're sort of going back to the basics of, you know, what the,

for example, WPATH criteria would suggest with respect to treatment, you know, it's suggesting that other mental health conditions should be in reasonable control.

And so then we say, well, what's reasonable control? I think that by digging a little deeper into what that means is that, you know, if you're actively, floridly suicidal at the time, then you're not going to be in a place to have a conversation about risks and benefits and making a serious life decision about an important aspect of your healthcare.

That being said, you know, many patients who have gender dysphoria, who have significant depression or anxiety, are -- do proceed with treatment because while they have co-morbid mental health problems, those problems are not interfering with their ability to -- to understand risks and benefits and provide assent or consent.

So I believe the answer is I don't -- I don't think so, really. I think that if the question is, you know, could the sickest patients be more suicidal because they were so sick that they never got blockers, that would not be --

that would not line up with my clinical experience, no.

Q Let's take a look at Table 3 of the paper. It's page 5. So as I understand it, now, you've got these different outcomes and then, you know, suicidality; suicidality, lifetime; mental health and substance abuse, et cetera. And then you've got two columns, the "yes" column meaning, yes, you have been treated with pubertal suppression and "no" meaning you have not.

Am I reading that right?

MR. SELDIN: Object to form.

A Yep. So there are -- there's rows and columns. The rows are mental health outcomes, like suicidality. And the columns are treatment status -- historical treatment status with gender -- with pubertal suppression.

Q If we look at "ideation with plan and attempt," do you see the results there?

There's 11 in the "yes" column and 473 in the "no" column. But the comparison baseline is much different. So the percentages are 24.4 for the "yes" and 21.5 for the "no." Do you see that?

A I see that, yes.

Q Is that a statistically significant difference?

MR. SELDIN: Object to form.

A I don't know.

Q And then if you look down under "suicidality (lifetime)," under attempts -- this says 37 is the raw, but then it gives the percent of 41.6. Is that telling us that over 40 percent of the treated group attempted suicide?

MR. SELDIN: Object to form.

A Yes, that is correct.

Q All right. Let's move on to the Kuper paper, Exhibit 17.

(Shumer Exhibit 17 marked.)

Q Doctor, are you familiar with this paper?

A Yes.

Q Is this the Kuper paper cited in paragraph 72 of your declaration?

A Sorry. Can you repeat that.

Q Sorry. Is this the Kuper paper cited in paragraph 72 of your declaration?

A Yes.

Q What is --

MR. SELDIN: Mr. Fisher, can you scroll down just for a date. Sorry.

MR. FISHER: Yeah. It's not me,

unfortunately. It's Shawn.

MR. SELDIN: It's Shawn. Long-suffering Shawn, can you scroll down, please.

MR. FISHER: Right. Poor Shawn.

A Yeah, that looks right.

BY MR. FISHER:

Q Good. Okay. So what is this -- what is this paper purporting to tell us?

A All right. So we're getting into the nitty-gritty here so just give me a second here to refresh my memory so I can give you the right answers here.

Okay. So this is, I believe, a clinic in Texas, which is, you know -- this is now thinking about hormone therapy, and we're using different scales to get at this -- this important question that we keep going back to is, well, what is the potential benefit or what is the measured benefit of the use of these aspects of gender-affirming care?

So in this particular study, they're assessing things like body image, depression, anxiety, and using scales to sort of assess differences in these -- these -- in these features of their patient population before and

after treatment.

Q And what does it purport to show?

A Well, there's improvement -- there's varying levels of improvement in different scales -- or scales that are measuring these elements of health. Right? So improvement in body -- a large improvement in body dissatisfaction, small to moderate in depressive symptoms, small improvement in total anxiety.

So, you know, they're going on to describe, you know -- they're doing a bunch of tests, before, after. This is how much they changed over time and going into detail about each one.

Q And, again, in terms of study design, is this another retrospective survey?

MR. SELDIN: Object to form.

A So I think this is -- no, this is not a retrospective survey. This is --

Q Oh.

A -- what we would call a -- you know, a longitudinal cohort design. So they're getting -- the same people are getting a survey at initial presentation and then in follow-up.

Q Okay. Gotcha. And then the follow-up period was what? Just one year?

A I don't think that I have that information just from the abstract. We'd have to go to the method section to be sure.

Q Let me scroll down then. Page 3. There it is.

A Yeah. So it's 11 to -- go up a little bit. Yeah, so I think the follow-up survey was conducted for these -- the follow-up set of surveys were conducted, it looks like, in a range between 11 and 18 months.

Q 18 months. Okay.

And then if we scroll down to Table -- Table 5, page 8. You see there it says, under "Suicide Attempt," one -- and then under the column "1 to 3 months before initial assessment," 3; and then I guess that's the percentage, which is 2; and then over in "Follow-Up Period," 6, which is 5 percent.

Is that a statistically significant difference?

MR. SELDIN: Object to form.

A I don't -- I don't know.

Q Okay. All right. Let's move to Exhibit 18. This is the Costa study.

(Shumer Exhibit 18 marked.)

Q Okay. Doctor, do you recognize this study?

A Yes.

Q And is this the same Costa study cited in paragraph 72 of your declaration?

A Yes.

MR. SELDIN: I apologize. Shawn, do you mind just scrolling down for a date -- or maybe it's on the side.

A Yeah, Costa 2015. I think that we're on the right track here.

BY MR. FISHER:

Q Okay. So just tell us, if you would, please, what this study is purporting to show us.

A Yep. So this is sort of another attempt to try to isolate the effect of GnRH agonist treatment and its effect on health outcome.

So in this particular example, we're talking about something called the Children's Global Assessment Scale, which, you know, is, I believe, sort of an overall measure of -- of well-being and/or psychosocial functioning in adolescents.

And so we're -- we're showing results of patients that had this assessment done prior to any intervention and then showing that there was improvement in their functioning after six months of psychological support and then also showing

the intervention of pubertal suppression having improvement in functioning as well, and then comparing people with pubertal suppression plus psychosocial support versus psychosocial support alone.

There's a description of a greater improvement with the combined approach.

Q Does it tell us anything about suppression alone?

MR. SELDIN: Object to form.

A So I think that's a hard thing to do, suppression alone -- right? -- because we all -- as I said before, we're not kind of living in a vacuum. So if we -- if we're seeing a patient and our standard of care is to provide psychosocial support to all of the patients we see, then, you know, making an arm of the study, you know, here's your -- here's your GnRH agonist, but we're not going to support you, you know, there's -- there's -- again, there's not equipoise there. That arm of the study no one would think would be better than a combination of psychosocial support plus GnRH agonist. So doing an arm of a study like that I don't think would be ethical.

So, no, there's not a comparator arm where

there was someone just getting medical treatment without any psychosocial support. Likely for the reason that I just mentioned.

Q Does it show results at different periods after treatment?

MR. SELDIN: Object to form.

A I believe the study has time points at 6 and 12 months.

Q Well, as I look at Table 2, which is on -- I don't know -- 2212 in the top corner in terms of page number.

So is this telling us, it looks like, maybe three time periods?

MR. SELDIN: Object to form.

A So if we want to read this table together, it looks like there's four time periods. "Time 0" tends to imply before the study started or baseline. Right?

Q Okay.

A Then there's a Time 1, Time 2, and Time 3.

Q Right. And so how many months between each of these periods?

A I think six, but it doesn't say in the table, to be certain.

Q Okay.

MR. LANE: Hey, Tom, can we take this off the record for just a quick second?

MR. FISHER: Yes.

MR. LANE: Thanks.

(Discussion held off the record.)

BY MR. FISHER:

Q Okay. Let's move on. I think we're ready for 19, which is the Carmichael study.

(Shumer Exhibit 19 marked.)

Q Doctor, do you recognize this study?

A I do.

Q Is this the Carmichael study cited in paragraph 72 of your declaration?

A It is.

Q And what is this study telling us?

A So, again, this is just trying to isolate the treatment with the GnRH agonists, which is, of course, just one element of gender-affirming care in young people. So trying to understand how treatment with these interventions may affect a variety of different things over a course of somewhere between 1 to 3 years. And so some of the things that they were measuring included bone mineral questions and mood questions.

And so this is -- that is what this one is

attempting to convey.

Q All right. So let's look at page 19. Bottom right, it says 19 of 20 -- 19 over 26. Okay. So the paragraph --

MR. FISHER: Maybe make that just a little bit bigger, Shawn. There we go.

BY MR. FISHER:

Q That paragraph right in front of us says, "We found no evidence of change in psychological function with GnRHa treatment as indicated by parent report (CBCL) or self-report (YSR) of overall problems, internalizing or externalizing problems or self-harm." Do you see that?

A I do.

Q Is that consistent with your understanding of this study?

MR. SELDIN: Object to form.

A Right. This is one of their findings, yes.

Q All right. Let's go to Exhibit 20. Okay. This is the Achille.

(Shumer Exhibit 20 marked.)

Q So, Doctor, do you recognize this study?

A I do.

I always wondered how people would pronounce that last name. I always say Achille.

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Q. Oh, for me it called to mind Achilles.
A. I know. I know. I was -- I'm glad we're talking about it because it's bothered me.
Q. You're the one who would know. I better adapt myself.
MR. SELDIN: Is one the French maybe?
Q. I'm sorry. So this study you cited in paragraph 72, I think also paragraph 76 of your declaration, by the way.
A. Yes.
Q. Okay. Right. So what is this -- what is this study telling us?
A. So this is kind of similar, assessing various elements of mental health and quality of life over the course of time. So, again, sort of a longitudinal cohort study. And I believe this time we're -- there's some gender hormone intervention mixed in, so not specific only to GnRH agonist treatment.
Q. And what does it purport to show from that study?
A. Well, there's a lot of findings. I think that ultimately there's improvement in many of the measured outcomes, you know, reducing depression scores, suicidal ideation scores, increasing quality of life scores.

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Q. Looks like 50 participants?
A. Yep, that's what it looks like to me too.
Q. And so they measured at six-month intervals, but how many intervals?
A. Yeah. We're going to have to go to the method section for that.
Q. Okay.
MR. FISHER: Let's scroll down. There we go.
THE WITNESS: Can you go up a little bit. A little more. Okay. Sorry. Next page.
A. Okay. So there's three time points.
BY MR. FISHER:
Q. Okay. Where are you looking? Is that the table?
A. The 50 that they included in the final conclusion completed three waves of questionnaires, in the result -- in the "Results" section.
Q. Oh. Between -- between 20 -- those questionnaires, is it your understanding that those occurred between December 2013 and December 2018?
MR. SELDIN: Object to form.
A. Yes.
Q. Okay.
A. Yep. So this is basically just, you know -- it's

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a little different than the other studies because this is sort of saying, okay -- instead of doing before and after this one intervention, this is more, all right, these patients are coming to a clinic or a program that provides this type of care, and then we're sampling across three time points.
In the course of those three time points, the patient will have been -- the patient in this clinic, presumably, they might have, you know, been treated with pubertal suppression; they might have been treated with pubertal suppression and that's all until the end of the study; or no treatment; or pubertal suppression and hormones later in the study.
So it's basically saying, all right, these are three points in time, patients getting care at this place, and then measuring these -- these -- these health indicators.
So I think -- I would think of it as more of a, you know, being a patient in this clinic that provides gender-affirming care and what are the outcomes there, as opposed to discretely thinking about a specific intervention.
Q. Okay. Gotcha. All right. Let's go to

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Exhibit 21.
(Shumer Exhibit 21 marked.)
Q. So this is van der Miesen. Also in paragraph 72 -- or is this 76? No. Flip the page. Yes, there it is. van der Miesen.
This is the same van der Miesen study cited in paragraph 72; is that correct?
A. Yes.
Q. Okay.
A. Yes.
Q. All right. So what is this study telling us?
A. Well, this one is, again, about GnRH agonists, and this is sort of comparing different measures of people right when they come into clinic before treatment and then people on treatment, and here they're -- you know, I think in a lot of the things that we've been talking -- the papers that we've been most recently talking about were using the longitudinal approach, so were using a patient as their control.
This -- in this article, we're incorporating data from cisgender peers. So that's a little bit different. But that the people that came into clinic before treatment was started had higher self-harm rates, poorer peer relations

when compared to peers. Right?

So then the adolescents on pubertal suppression, when compared to peers, had fewer of these types of problems.

And so the -- and I -- so I think that, you know, this is sort of -- we've been talking a lot about how you've got to approach this tricky problem from a lot of different angles.

So this one is saying not the same people across time, but these two groups now that are in different parts of this process, let's compare them to a control group, their peers. Right?

So the people that are new patients before they started treatment don't look so favorable compared to peers. Over here, same point in time, but these patients here that probably came in a year ago now are on pubertal suppression, they're comparing better to their peers.

Q So is this what's known as a cross-sectional study then?

A Yes.

Q Do cross-sectional studies establish causation?

MR. SELDIN: Object to form.

A Yeah, no. This is going back to that same problem with research in general, that you need

to think critically about, you know, association versus causation and also generalizability. And so you can't get away from thinking about those topics in any research that you're reviewing.

So in terms of association here, is there -- there's one thing that's clearly different about these two groups. One of them is on pubertal suppression. So then if I'm -- if I'm thinking to myself, does that -- is that -- so does that establish causation? In and of itself, no.

So then I'm going to say, well, are there other potential causes? Well, is just being a patient in this clinic improving their report -- their scores? Maybe. Do I think so? I don't know. I don't think just being a participant in a clinic should, but it's something to consider.

So I think that presumably then at the end of this paper and all papers, you know -- as we've been going through all of these papers, I just -- and I'm sure that there's similar things in legal papers -- but at the end of every paper, we're taught to say why we think our findings are important, what the potential limitations are, and then remind why we think we're still important.

And so I think in this paper, you know, I would say that if I was to predict -- because I don't remember off the top of my head what their conclusion and limitation section would say. I would think that the strengths of this paper would be that, you know, it's a relatively large sample, that they're -- that, you know, this is a larger sample than a lot of the other studies that we've been talking about. There's a discrete difference between these two groups. And then they have these surveys that have really good data for the general population. So those are some of the strengths of the study.

A limitation would be that, you know, yes, because of the nature of it being a cross-sectional study, that you can't -- you can't infer causation. You can think critically about whether you think the differences between the cohorts could represent causation.

And then I always think about generalizability, as we've been talking. Right? So did these patients have something in common with the patients I see? So on the face of it, yes. Of course, there's probably differences: Different country, four years ago

versus today.

So, yep, there's limitations to this study just like the other ones that we've been reviewing. But overall I would say that it's a helpful contribution to the literature.

Q Let's take a look at page 703, and this will be -- yeah. It will be in the right-hand column on page 703.

MR. FISHER: There we go. Now, scroll down just a little bit more. A little bit more. Okay. Right there.

BY MR. FISHER:

Q So right in the middle of the screen, Doctor, do you see where it says, "The present study can, therefore, not provide evidence about the direct benefits of puberty suppression over time and long-term mental health outcomes"? Do you see that?

A I do see it.

Q Do you agree with that statement?

MR. SELDIN: Object to form.

A Yeah. So I think picking out this one sentence in a long paragraph -- I guess, before I answer that question, I'd like to read the whole paragraph. If you could scroll up a little bit.

Thank you. Just give me a second, please.
Q Sure.
A Perfect. Thank you. Yeah. So it's sort of -- like, I sort of predicted it would in the last answer that I gave -- right? -- that there's certain limitations to cross-sectional data -- cross-sectional research. So the reader should -- should, you know, think about that when forming conclusions.
I think that that sentence specifically is related to this causality question that you're raising, that the -- that just the nature of cross-sectional research doesn't provide evidence to direct benefit. And so, you know, that with the findings of this paper, you know, you consider that when thinking about how it may apply to the clinical decision that you're making in your office.
Q Let's go to Exhibit 22.
(Shumer Exhibit 22 marked.)
Q This is the Allen paper. I think this is cited in paragraph 76 of your report.
MR. SELDIN: Mr. Fisher, what do you think about a break after this paper?
MR. FISHER: Yeah. Perfect.

A All right. I'm with you.
BY MR. FISHER:
Q Okay. So is this the -- is this the Allen paper that you cite in paragraph 76?
A Yep. So in the expert report, now we're kind of moving on from focusing on GnRH agonists and now kind of more focused on gender-affirming hormone care.
So, of course, some of the papers that we've discussed in the previous set of papers involve both, so I included those citations in the previous paragraph. But now we're just focusing on papers that are referring to gender-affirming hormones.
Sorry to say the same thing twice there. Just wanted to get it straight in my head.
Q Yeah.
A Yep.
Q Okay. So we have a -- again, another small sample size, 47 -- 47 youths?
MR. SELDIN: Object to form.
A This paper had 47 youths, yes.
Q Yeah. Do you consider that a small sample size?
A Well, you know, I think it's a lot for a study about a condition seen in, you know, small gender

clinics across the country, but the more patients in the study, the more generalizable it can be.
So I use that as a -- you know, when I'm thinking about the importance of this study, I'm using that as sort of a factor, right? 47 is more than 30, less than a hundred.
I think that when you're trying to answer a specific question, sometimes you need to figure out how many patients you would need in order to find a statistically significant difference. So if you have two patients in a study and you're testing an intervention, that is definitely -- that definitely works, but they both get better, then your study is not very helpful. Right? Because you don't have the power to answer your question.
So I'm taking note of the 47, and then I'm wanting to read more about, you know, the actual details of the study.
Q What's your understanding of the duration? And we may have to scroll down to method. I don't know if it says on the front page or not.
A Yep. So I think that this is an example of a study that's looking less at sort of a long-term outcome but a short-term outcome instead, that

immediately following the start of gender-affirming hormones, is there change in some of these mental health measures.
And so in this -- so I think the contribution of this particular article to the literature is, you know, how does -- how do some of these mental health parameters change in the short term after a decision to start an intervention.
Q So does it tell you what the duration was?
A I don't see it on the screen, but I think that there was, I think, two measure points, and they were within a year apart, I want to say. But, you know, if we want to find the exact number of months, we can, but it is like -- granted, that this was a study that was looking at a short-term question --
Q Short-term question.
A -- so -- yeah. If we want to --
Q So I want to look over on the -- under the limitations heading on page 308.
A Can we -- sorry. Can I just --
Q Yeah.
A -- scroll down a little bit to read.
Okay. Go ahead with your question. Sorry

to interrupt.

Q That's okay. Under "Limitations" -- page 308, under the "Limitations" header, it gives us some confounding variables that -- and I take it that that means that these were not controlled for, including familial support, receipt of psychotherapy, difference in specifics of the medications. Do you see that?

A I do.

Q Does that affect your ability to generalize from this report?

MR. SELDIN: Object to form.

A Yep. So -- yeah, similarly, they're saying that, you know -- they're testing a treatment for gender dysphoria. So they're doing this in the setting of a clinic that provides treatment for gender dysphoria. And so inherent in that are people that are supportive enough to bring their child to the clinic. Right?

So I think what they're saying is, you know -- do we know that this intervention will work on children without that kind of support, support enough to come to clinic, to come to care? No, because we're not measuring them. So in that way there's a limitation.

Sort of like we've been talking about with all of these studies. Then how do I approach that when I'm trying to understand the meaningfulness of the study? Does it make the study completely invalid? Of course not. Right?

That, you know, we -- we use this to then extrapolate on answering the clinical question that we're asking about the patient that we're seeing.

Q Okay. All right.

MR. FISHER: Let's go ahead and take our break.

(Recess taken from 4:01 p.m. to 4:07 p.m.)

BY MR. FISHER:

Q Let's pull up -- I think we're ready for Exhibit 23, and I want to take a look at the Chen study, Psychosocial Functioning in Transgender Youth.

(Shumer Exhibit 23 marked.)

Q Doctor, do you recognize this study?

A Yes.

Q Is this the same Chen study cited in this paragraph 76 of your declaration?

A 76. Let's see. Yes.

Q Okay. So what is this study telling us?

A Yep. So this is sort of another trying -- another study trying to answer a discrete question about gender-affirming hormone care now, and in this particular one it's looking at people longitudinally, so the same person over time, pre and post intervention, and assessing for outcomes such as psychosocial functioning and feelings about one's appearance.

Q And what does it conclude?

A I think the upshot is that there's improvement in the outcomes that they were investigating after treatment with hormonal care.

Q So at the beginning, how many of the subjects -- what percentage of the subjects had severe depression?

MR. SELDIN: Object to form.

A We're going to have to get into the -- dive into the study, I think, in a little more detail to answer that question. I don't know that number off the top of my head.

Q I'm just looking for it. I don't want to make you look at every page, so -- let's go down to Table 2, which is on page 245.

Okay. So, Doctor, as I look at that table, I see a record of adverse events, which I

understand to be during the study. And does this tell us that two people died by suicide during the study?

MR. SELDIN: Object to form.

A It does tell us that.

Q Was there -- do you know about whether the study was stopped as a result of those suicides?

MR. SELDIN: Object to form.

A I don't -- I don't think the study was dis- -- I don't believe the study was discontinued based on those events, but I'm not certain of that.

Q And just to be clear, these were people who were being treated with hormones who committed suicide?

MR. SELDIN: Object to form.

A That's correct.

Q Do you know if there was any Institutional Review Board inquiry of the study as a result of the suicides?

MR. SELDIN: Object to form.

A I think these would be great questions for the authors.

What I would say, though, is that transgender people, whether they're participating in studies, not participating in studies, on

medications that overall have shown to be helpful, not on medications that overall have shown to be helpful, live in a world that's not at times very easy for them to live in, that -- that in -- in the lived experience of transgender adolescents, that there's, you know, oftentimes constant bullying, harassment, not only from peers or family but from people in charge, and that in the face of that, that that can be overwhelming.

Unfortunately in our country today, not only for trans youth but for youth in general, there's, you know, a higher rate of suicide and suicidality than we would ever want. So the fact that transgender people -- that some of them experience suicide is terrible, of course, not necessarily surprising, and that people on effective treatment for gender dysphoria, you know, can be improving in their gender dysphoria but still live in the world that we live in, which remains very challenging.

So I don't know the answer to your question about whether the study was discontinued or what the IRB in this specific hospital decided when that event happened, but I certainly empathize

with the providers of those patients, who -- who I'm sure will always remember taking care of some really challenged kids.

Q Do you know how the suicide rate of the participants in this study compares to the suicide rate in the general population?

MR. SELDIN: Object to form.

A Well, I don't know if I can rattle off numbers. But, you know, we do know, of course, that -- are you saying suicide rate or suicidality?

Q Suicide rate. Completed suicide rate.

A Yes. So it's certainly going to be higher because the --

Q I'm sorry. Higher where? In the study?

A That's correct.

Q Okay. Completed suicide rate in the study is higher than in the general population, correct?

MR. SELDIN: Object to form.

A That is correct.

Q Okay. Do we know whether the suicide -- completed suicide rate of participants in this study is higher than the trans population overall?

MR. SELDIN: Object to form.

A I don't know the answer to that question.

Q Okay. Is there a reason to infer, given the higher rate of participant -- the higher completed suicide rate of participants in this study compared to the general population, that the gender-affirming treatment caused more suicides?

MR. SELDIN: Object to form.

A Can you repeat that, please.

Q Is it legitimate to infer from the higher suicide rate among participants in this study, compared to the general population, that the gender-affirming treatment caused more suicides?

MR. SELDIN: Object to form.

A Yeah. See, now you're asking me the same question but in reverse. You can't do it either way. Right? So that, you know, when patients are -- when patients have a positive outcome or a negative outcome, you know, with these types of studies, the answer to that question is unclear. You've got to use your -- you've got to use your executive functioning as a clinician to understand, you know, what that might imply.

So I think, you know, the fact that two patients in this study died by suicide, you know, that's a really important outcome in this study

that I think people take note of.

I think that that's in the context of the very high suicidality rate amongst trans people and in the broader context of -- you know, we've been talking about suicide and suicidality a lot today, across a lot of different studies, and so certainly if you -- if you're wanting to say that treatment is causative in this particular instance and not causative of the positive outcomes in all of the other studies that we've just mentioned, then, of course, that doesn't make sense.

So there's got to be some more nuanced answer. Right? The nuanced answer is that it's complicated. We need to take all of these studies as a collective, figure out how we want to use each of these studies in our mental construct of this very complicated question, how to help a group of really suffering kids, and -- and so, you know, the -- I think the -- this really -- these two tragic patients, you know, are important to think about and consider when we're analyzing this paper and also in the context of the broad body of work that we've been discussing all day today.

Q All right. Let's move on to the next exhibit. So I think we're up to 24 now. So this will be the -- I'm going to butcher this pronunciation, Cecillia Dhejne -- not Grannis. This is D-H-E-J-N-E.

(Shumer Exhibit 24 marked.)

A I think it's pronounced "Dane."

Q "Dane." Thank you very much.

A Uh-huh.

Q Now, this is not a study that you cite in your report, but are you familiar with this study?

A You know, I think I have seen this study more recently. But if we can zoom in a little bit, that would be helpful.

Q Sure.

A Okay. I'm with you. Yes, I have seen it before.

Q You've seen it before. Okay. What do you understand this study to show? What conclusions does it draw?

MR. SELDIN: Object to form.

A Yeah. So this is specifically about surgery, and so we're getting a little bit outside of my wheelhouse as an endocrinologist, but this is talking about, I believe, gender-affirming genital surgery in Sweden, and it's -- it's

talking about health outcomes, specifically important outcomes like suicide, suicidality, and sort of the conclusion is a higher -- that suicidality -- or higher -- higher risk for mortality, suicide behavior, and psychiatric morbidity than the general population after this type of surgery. That the surgery helps with gender dysphoria but that by itself was not sufficient for this cohort of patients analyzed.

Q Any particular reason you didn't include this study in your report?

A Well, I'd say one reason is I didn't really talk about surgery in my report, but I'm happy to discuss it now with you.

Q No. That's okay. I just wondered. All right. Let's move on to -- I guess we're up to 25. Okay.

(Shumer Exhibit 25 marked.)

Q Okay. I want to get up here the endocrine -- this is the Endocrine Society Guidelines. Endocrine treatment of gender dysphoria it says at the top.

There we go.

And so, Doctor, do you recognize this document?

A I do.

Q What is this document?

A This is the -- a document published by the Endocrine Society. It's a clinical practice guideline related to providing the type of care that we've been discussing today.

Q Okay. What role does it play, or of what utility is it in your practice?

A Well, you know, I think that we've been talking about a whole bunch of different papers today that, you know, not too many people have maybe the time or the knowledge to sort through and read and analyze by themselves. Right?

And so, you know, I think that -- let me just use an example here. Like, if I wanted to know a simple question about, you know, the use of a thyroid medicine, is one brand better than the other, I might independently be able to find a good study to answer that question. Right?

But faced with a larger question, like how do we approach gender dysphoria, you know, that requires, you know, a careful review of a lot of pieces of evidence.

And so I think that the Endocrine Society, they have in several instances tried to help

people in this field by doing that review and providing suggestions and recommendations related to care. So this being one example.

There's several other examples of clinical practice guidelines, sort of along those same lines, kind of complicated topics in endocrinology that providers in the field would benefit from sort of an overview and some guidance.

Q Okay. All right. Let's go to the next exhibit. So this will be 26. This will be the Standards of Care for the Health of Transgender and Diverse People.

(Shumer Exhibit 26 marked.)

MR. FISHER: There we go.

BY MR. FISHER:

Q Doctor, do you recognize this document?

A I do.

Q And what is this document?

A This is the Standards of Care for the Health of Transgender and Gender Diverse people, Version 8, published by the World Professional Association of Transgender Health.

Q What does this perform in your practice?

MR. SELDIN: Object to form.

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A Well, you know, I think that the -- I think that both this and Endocrine Society Guidelines that we just reviewed are two different attempts to sort of bring together evidence and either provide recommendations or standards of practice based on that evidence.

So I think they're -- they function -- it functions in a similar way. I think there's differences. For, one, the endocrine documents is much more focused on the medical management of gender dysphoria, whereas these standards of care have a larger breadth and scope of health in general for trans people.

But when it comes down to, like, the actual content that impacts practice, they're quite similar.

Q Okay. So now we're ready for 27, and this will be the document. It says "Recommendation of the Council for Choices" on it.

(Shumer Exhibit 27 marked.)

Q Doctor, are you familiar with this document?

A I wouldn't say that I'm intimately familiar with all of the details, but I'm aware of its existence, yes.

Q So have you read it before?

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A I have read it before, yes.

Q What do you understand it to be?

A So I understand it to be an effort in the country of Finland to think sort of critically about how the country should provide gender-affirming care to its population.

Q Is this what might be called -- or what is called in the scientific community a systematic review?

MR. SELDIN: Object to form.

A I don't know if that is an appropriate term or not, but maybe if we scroll down I can better answer that question.

Q Okay.

A Yeah. I mean, I'm not sure if I can agree or not agree with whether this is a systematic review. I think of it as, like, a governmental document to inform care for the country of Finland.

Q Was either the WPATH guidelines or the Endocrine Society Guidelines a systematic review?

A Well, you know, I think you're asking -- you're saying the words "systematic review." So let's unpack that for a second. To me a systematic review is an attempt to take a question or a topic and attempt to review every -- every piece of relevant literature about that topic and then present it to -- present it in some sort of written form.

So I would suggest that in both the WPATH document and the Endocrine document, they go through at length about how they determined all of the relevant articles that they included, and -- and, therefore, I think the term "systematic review" fits in both of those cases.

This may or may not be a systematic review. I'm just not as familiar with the methodology on which it was written to definitively answer that question, as I'm more familiar with those other two documents.

Q So let's take a look at page 7 of this document. Okay.

MR. FISHER: So let's make that a little bit bigger so we can see it.

Oh, there we go. Great.

BY MR. FISHER:

Q Can you read that okay, Doctor?

A Yep.

Q So the paragraph that begins with, "In cases of children and adolescents," just if you could just read that paragraph to yourself and just let me know when you're ready.

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A I've completed reading the paragraph.

Q Okay. Great. So this is talking about treating children and adolescents with gender dysphoria; is that your understanding?

MR. SELDIN: Object to form.

A Well, I guess it is in some way. I think that this is a -- you know, this is quite a different type of manuscript than the two we've been reviewing before in that the previous two were, you know, written for healthcare professionals in order to review what the evidence might suggest in terms of, you know, medical decision-making.

This is -- this is a government-produced document that's informing, you know, a -- a process that's run by a governmental health system which, in fact, does still provide gender-affirming care to youth.

So I would say that, yes, it's -- the topic of this is treatment of trans youth but in a -- sort of a different context than the reviews that we've been discussing previously.

Q So it says that ethical issues are concerned with the natural process of adolescent identity, development, and the possibility that medical intervention may interfere with this process.

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Just that observation about the ethical issues, do you agree with that or disagree with it, or do you have an opinion about it?

MR. SELDIN: Object to form.

A Well, there's a few different parts of that sentence. Right? So I think that there's ethical issues in all aspects of medicine, and, you know, I think that, for example, as a -- as a clinician, you know, I think I'm trying to practice ethical medicine every day.

So I would consider every patient that I see to present with some sort of ethical challenge that I'm trying to do no harm and provide high-quality care.

That the second part of that sentence related to medical interventions interfering with gender identity development, I don't agree with that statement, no.

Q Okay. So do you find this document to be -- or when you read it, did you find it to be useful at all in your understanding of the appropriate treatment of gender dysphoria?

MR. SELDIN: Object to form.

A Well, it's certainly not a document that is, you know, written to provide recommendations to

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healthcare clinicians. I think that my takeaway from this is that, you know, everyone around the world is wanting to do the best they can to treat children who are struggling, especially struggling with, in this case, gender dysphoria, that the system of healthcare in Finland, of course, while different than that in the United States, I think, is at its core rooted in trying to make the population of that country as healthy and productive and happy as possible.

So I think that in this particular situation, the -- the authors of this manuscript, you know, are reviewing evidence and then thinking to themselves, well, how does this apply to healthcare in Finland? In the end, they've come up with a system that seems to be, you know, different than every other -- every other -- every country has their own system of healthcare. Now, I'm not an expert on this, but how I understand it is that young people with gender dysphoria in Finland are still treated with gender-affirming care. And there's a system in place that they have organized based on a bunch of, presumably, medical professionals and politicians and healthcare people coming together

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and forming a plan.

So do I rely on this document to inform my clinical care? I do not.

But I am following topics like this to see how -- you know, how healthcare around the world is being performed and how people are making decisions based on reviewing the same literature that we've been discussing together.

Q So on the prior page of this report, under ethical assessment -- there we go -- that second paragraph says -- and, again, we're talking here about treatment of gender dysphoria. The second sentence of that second paragraph, it says "As far as minors are concerned, there are no medical treatment that can be considered evidence-based." Do you see that statement?

A I do see the statement.

Q What is your reaction to that statement?

A Well, I think it's the -- probably the topic that we've been talking over the last three hours about, you know. We've been reviewing the evidence and so, you know, I don't know -- you know, in terms of translation from Finnish to English but, you know, their statement that no medical treatment can be considered

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evidence-based, you know, doesn't sound right to me.

You know, maybe their meaning is that the evidence that they reviewed makes them determine that medical treatment isn't necessary or something like that. But, of course, there is evidence that, you know, we've been talking all day about together.

Q So let's go to page -- looks like page 10, right above the number 9. Okay. So right there, right in the -- just right above number 9, it says, "Surgical treatments are not part of the treatment methods for dysphoria caused by gender-related conflicts in minors." Do you see that statement?

A I do.

Q What is your reaction to that statement?

A I don't have much of a reaction. It sounds like they're not -- patients in Finland that have gender dysphoria neither before nor after the writing of this report were being treated with surgical interventions.

Q All right. Let's move to 28, which is a document called "A systematic review of hormone treatment for children."

(Shumer Exhibit 28 marked.)

MR. FISHER: Make that a little bit bigger. There we go. Maybe the doctor needs to see the top of that. Let's just make sure -- there we go.

BY MR. FISHER:

Q Doctor, does this document look familiar to you?

A I have seen this before, yes.

Q Have you read it?

A I have.

Q And what do you understand it to be?

A So this is, you know, I think that --

THE WITNESS: Can you scroll down just a little bit to help me recall if it's just -- okay. Thank you. Yep.

A So I think that the people that wrote this study are, you know, trying to sort through this question that we've been sorting through together, you and I. You know, what is the -- what is the evidence that informs the statement made by organizations such as the WPATH and the Endocrine Society, to make them recommend gender-affirming care?

And so the -- that the folks who wrote this, you know, clearly outline sort of how they

identified the articles that they reviewed. Then they, you know, come to a conclusion about what the -- some of the evidence means.

So I think their conclusion is that -- you know, and they make some of the same points that we've been discussing, of course, no randomized control trials, not possible to do, and, you know, sample sizes are small in certain studies.

If we scroll up for a little bit -- and so I think that the conclusion that they reach is in some ways different than from the other documents that we've been discussing, that they are -- well, I don't know. Is that -- is that what you wanted me to --

BY MR. FISHER:

Q You can stop there if you want. I'll ask another question. It's okay.

A Go ahead. Yeah.

MR. SELDIN: Doctor, you don't have to do both sides of this. Just give the answers, not the questions. Mr. Fisher still needs a job.

BY MR. FISHER:

Q Doctor, do you understand this review to be a systematic review?

MR. SELDIN: Object to form.

A Yeah. So, again, when we use the words "systematic review," I think to me that implies that I'm -- at the onset, here's my question, here's my search strategy. I'm sort of putting it all out there for the reader to look at, and then here's what I found in my results. So, yes, this is a systematic review.

Q Do you have any reason to be critical of the system that they use, the selection of papers they deemed relevant?

MR. SELDIN: Object to form.

A Well, you know, I'm not sure I can answer that question with certainty. I think that -- you know, I'm not sure that there is -- that I have necessarily a specific objection to the methodology they use in their systematic review. But I think that, you know, for the purposes of conclusions, you know, when I review the literature that they review, that we come to different conclusions, that, you know, I think that -- you know, I'm just struck by the notion that a lot of the, you know, well-accepted medicine that we do in this country, in the world, you know, is -- has to do with complex questions that don't have simple answers.

And that for this particular example, the -- you know, they've chosen to rely on the studies that they've identified. I think they have maybe a stronger tendency to diminish the impact of studies with smaller sample size, to put less impact on certain types of methodological studies. And so, you know, it's okay that they have a difference of opinion when reviewing the literature, and so when I -- you know, when I'm asked, you know, does this impact how I consider my approach to -- to gender-affirming care, you know, I would say that just like any aspect of my practice, that I am always wanting to keep up to date with the science, with new publications.

And if, for example, you know, there's evidence that suggests this aspect of your practice should change because now there's stronger evidence in this regard or that regard, then I am -- I would be excited to read it and then change practice because that would mean an improvement in health and quality of life for the patients that I'm seeing.

If you're asking at this time do I agree with the sort of upshot of the conclusion of the systematic review, the answer is no. That

doesn't necessarily mean that the -- you know, the methodology that they used is incorrect. But, you know, I think that the conclusions that they make are not in keeping with the conclusions that every major mainstream medical organization in the U.S. has made on this topic.

Q Have those mainstream medical organizations undertaken systematic reviews such as this one to come to those conclusions?

MR. SELDIN: Object to form.

A Well, WPATH and the Endocrine Society, yes.

Q Have they been transparent about the studies that they've included?

MR. SELDIN: Object to form.

A I would say in both cases, I think they do a nice job of outlining how they've -- how they went about the process of writing their manuscript, yes.

THE WITNESS: If I may, I just -- I had a voice mail, and I'm just wondering if it has to do with family, so if this might be a good time.

(Recess taken from 4:47 p.m. to 4:51 p.m.)

BY MR. FISHER:

Q Now let's mark -- I guess we're up to 29, I think, and this would be -- this is Evidence

Reviews: Gonadotrophin releasing hormone analogues for children.

MR. FISHER: Can we make it just a little bit bigger so doctor can see it.

(Shumer Exhibit 29 marked.)

Q Doctor, have you seen this document before?

A I have.

Q Can you describe what it is, please.

A This one comes from the UK, and I believe that -- I'm not sure what kind of -- I'm not sure of the profession of Dr. Cass, but that the author here is attempting to review specifically the question of GnRH analogues for children with gender dysphoria, and to present to, I think, a government -- for a governmental purpose, I believe, similarly in trying to -- to decide on how gender dysphoria management will occur at the public health system in the UK.

Q Have you read this document entirely?

MR. SELDIN: Object to form.

A I'm not sure if I read it entirely. I think I've read -- if not entirely, most of it.

Q Do you understand this to be a systematic review?

MR. SELDIN: Object to form.

A You know, again, I don't know that I have all of the information I need to answer that question. I do believe that they describe how they -- how they included papers, and so in that regard you could consider it a systematic review.

But I apologize. I'm not sure that I have more expertise to answer that question regarding this particular document.

Q Well, to the extent that you've studied it, did you have any criticism or do you remember having any criticism for the way that the author went about selecting the studies to be reviewed?

MR. SELDIN: Object to form.

A I don't recall a specific criticism about study inclusion, no.

Q Are you familiar with the conclusions drawn by the author?

A Well, I think that there's probably a lot of different conclusions. I think that with each -- if we'd like to scroll through, we can. But I think in general the author is reviewing each article one at a time and sort of citing relative strengths and weaknesses of each article.

I think the upshot, similar to our discussion about the Finnish review, is that the end conclusions differ from that of the WPATH and

Endocrine Society recommendations, that the conclusion is that in order to -- yeah. No, I don't remember if they're making a treatment recommendation in this or they're just commenting on the degree of evidence.

You know, I think, again, the difference between this type of review and clinical practice guidelines are that clinical practice guidelines or standards of care are really intended for a clinician to make clinical decisions about specific patients. Right? And that this -- this type of review is written to -- with a slightly different purpose to inform, you know, health -- healthcare decisions.

And so while I may disagree with some of the ultimate conclusions from this report, I also am aware that in the United Kingdom adolescents with gender dysphoria continue to receive gender-affirming care in spite of or alongside this report.

Q Is this report relevant to your understanding of the science behind gender-affirming care?

MR. SELDIN: Object to form.

A Yeah, I think that my answer is probably exactly the same as how I commented in the Finnish

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article, because I think that there's a lot of commonality there.

So not necessarily how I interact with clinical decision-making, but I understand that people can review a lot of similar literature and come to different conclusions about different questions. Right?

So I think I'm asking clinical questions in the office so I'm going to be relying primarily on clinical practice guidelines. You know, I'm not making nationalized health plan decisions for a European country. So it's a little different there.

But, no, it doesn't inform my care to that degree. No.

Q Okay. All right. Let's look at Exhibit 30 -- what we'll mark as Exhibit 30. It says "Evidence Review: Gender-affirming hormones for children and adolescents."

(Shumer Exhibit 30 marked.)

MR. FISHER: There we go. Make that a little bit bigger.

BY MR. FISHER:

Q Doctor, are you familiar with this document?

A Yep. So this is almost exactly the same idea as

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the one we just were reviewing before, but this time instead of talking about gender -- GnRH agonists, it's a review of gender-affirming hormone care. Same author, same country, same questions.

Q Have you read this document before?

A I have.

Q And you understand it, like the other one, to be a systematic review?

MR. SELDIN: Object to form.

A Yeah. I think that the -- the same answer. I think that the authors outlined sort of how they came up with their first criteria, I believe, if I'm remembering correctly, and that informed sort of the body of this document going through studies, describing strengths and weaknesses, coming up with conclusions this time related to hormonal care.

Again, not a document designed to answer clinical questions for healthcare providers but to answer questions related to how healthcare is provided in the public sphere in the United Kingdom, as I understand it.

The conclusions, you know, reached, while different than mine, are sort of asking a

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different question, I guess. But that ultimately, in spite of or alongside this document, the adolescents in the United Kingdom who do meet criteria for gender dysphoria are still receiving gender-affirming care.

Q Do you remember when reading this document if you had any criticisms of the literature that the author decided to include in the review?

MR. SELDIN: Object to form.

A I don't recall specific criticisms.

Q So I guess I'm wondering, do you think that Dr. Hilary Cass, who did both of these reviews, made -- arrived at unreasonable conclusions based on the evidence she reviewed?

MR. SELDIN: Object to form.

A I think reasonable people can come to different conclusions based on similar evidence, but I would disagree with her conclusions.

Q Okay. What about the Sweden systematic review, 28 -- let's put 28 back up, if we could, please.

Do you think that the authors of this paper arrived at unreasonable conclusions based on the evidence?

MR. SELDIN: Object to form.

A Yeah. So I guess this one, I guess I'm going to

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need a refresher on a conclusion that you're referring to because there's a lot of different conclusions, I think.

Q Well, let's see here. So let's turn to page 4. And at the bottom, there's a paragraph -- yeah, there you go. Can you read that okay? Maybe it's cut off.

There we go. Can you read that okay, Doctor?

A Yes.

Q So I'm looking at the paragraph that begins "Because these studies."

A Yes.

Q Okay. So I'll just read it. "Because these studies were hampered by a small number of participants and substantial risk of selection bias, the long-term effects of hormone treatment on psychosocial health could not be evaluated. Of note, the above studies do not allow separation of potential effects of psychological intervention independent hormonal effects."

Now, my understanding is that you disagree with that statement?

MR. SELDIN: I'm sorry, Tom. You cut out. Did you read to the end of the paragraph?

MR. FISHER: Oh, you want -- I need to read the paragraph again?

MR. SELDIN: Well, I just --

A I can read it but --

MR. FISHER: Doctor's frozen up. Doctor, your video is frozen. I hope that our connection is good.

THE WITNESS: All right. Is that better now?

BY MR. FISHER:

Q There we go. Yep.

So that paragraph --

A Yeah. Yeah. I think that you cut out during the paragraph. But, yes, I read it too.

Q You may disagree with that statements -- with those two statements?

A Yeah. So I don't think I would write this paragraph exactly the same way. I would say that, you know, for reasons that we've discussed all afternoon.

Some of these studies have smaller numbers of participants than, you know -- than in other areas of research. You know, we talked a little bit about selection bias which, you know, we discussed how relevant that is to clinical

practice. Their conclusion on "the long-term effects of hormone treatment on psychosocial health could not be evaluated," no, I wouldn't agree with that.

I would say that in each of these studies we're learning more about different impacts on psychosocial health, that, you know, the -- there's certainly, you know, I think in all areas of medicine an anticipation that research will continue to be done to add to our growing body of literature. But I wouldn't agree that the long-term effects could not -- cannot be evaluated.

And then the last sentence, you know, "separation of potential effects on psychological intervention independent of hormonal effects," I think that's another topic that we spent a lot of time talking about today, that it's really hard to control for psychological intervention because no one's going to prescribe a hormonal intervention to trans youth with no attempt to support them psychologically.

But I think that in different ways through the body of literature that we've taken a little journey on today, that we can make attempts to

isolate that. And I -- in my estimation, the -- the result of that journey is that, yes, we are able to separate the fact that hormonal effects independently improve health.

Q These authors reached a different conclusion. And just so we can put it in terms of a conclusion, let's turn over to page 12, under the heading of "Conclusion." There we go.

Doctor, I don't think that this paragraph is saying anything we haven't already said, but go ahead and read it. Just let me know when you're ready.

A That little paragraph under "Conclusion"?

Q That's right. Yes.

A Right. So, yep, that's sort of similar to the sentences we just discussed, yes.

Q So you've reached one conclusion. They've reached a different conclusion. And all I'm asking is whether their conclusion is unreasonable.

MR. SELDIN: Object to form.

A I think I would -- I would say that I strongly disagree with their conclusion. I'm not sure I like the word "unreasonable" because I think it implies that there's mal intent or something.

You know, it's a word that I don't often use.

So I disagree with their conclusion. And, you know, I think that -- that I disagree just on the face of it based on the review of the literature. But then as I put that information into practice, you know, I think -- because I think that it's fair to say that when we're reviewing all these papers and, you know, talking to seemingly smart people who may disagree with one another, that it can get confusing, like, who's right, and that can be overwhelming, especially, you know, when we're talking about a topic that might be really foreign to someone without a lot of exposure or experience working with trans people.

So I think that a not-so-insignificant factor in my understanding of this topic also is my hundreds of hours of experience working with and treating trans youth and watching the improvements in their mental health, their quality of life, while following the current standards of care.

So, you know, if I were someone sort of on the fence, does this evidence support the work that I do every day, you know, I think that

the -- the Christmas cards from patients well-graduated from my clinic, talking about the success that they're having, starting a family, getting a job, and thanking not only myself but the university, the clinic itself for allowing them to have a chance at a normal, happy life, I think that's not an insignificant factor in how I understand the utility, the efficacy of gender-affirming care.

MR. FISHER: Harper, we may be about done here. Let's take a short break so we can confer and you can confer, and then we'll come back. Just a couple minutes.

MR. SELDIN: Sounds good. Thanks.

(Recess taken from 5:09 p.m. to 5:10 p.m.)

MR. FISHER: Doctor, I want to thank you very much. I don't have any further questions, but I'm going to turn it over to your lawyer, to Harper, and he might have some additional questions.

MR. SELDIN: Thank you, Mr. Fisher. We have nothing for this witness.

MR. FISHER: Okay. But Dr. Shumer will read and sign the transcript.

COURT REPORTER: When would you like the

transcript? Is it Monday?

MR. FISHER: Monday is fine. But I want a rough, please.

COURT REPORTER: Harper, do you want a rough and the transcript Monday?

MR. SELDIN: Yes. I'll have what he's having.

(The deposition concluded at 5:11 p.m.)

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

K.C., et al.,)
)
Plaintiffs,)
)
-v-) CASE NO.
) 1:23-cv-00595-JPH-KMB
THE INDIVIDUAL MEMBERS OF THE)
MEDICAL LICENSING BOARD OF)
INDIANA, in their official)
capacities, et al.,)
)
Defendants.)

Job No. 181267

I, DANIEL SHUMER, M.D., state that I have read the foregoing transcript of the testimony given by me at my deposition on Tuesday, May 16, 2023, and that said transcript constitutes a true and correct record of the testimony given by me at said deposition except as I have so indicated on the errata sheets provided herein.

_____
DANIEL SHUMER, M.D.

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STATE OF INDIANA

COUNTY OF ST. JOSEPH

I, Melody M. Goodrich, a Notary Public in and for said county and state, do hereby certify that the deponent herein was by me first duly sworn to tell the truth, the whole truth, and nothing but the truth in the aforementioned matter;

That the foregoing deposition was taken on behalf of the Defendants; that said deposition was taken at the time and place heretofore mentioned between 9:02 a.m. and 5:11 p.m.;

That said deposition was taken down in stenograph notes and afterwards reduced to typewriting under my direction; and that the typewritten transcript is a true record of the testimony given by said deponent;

And thereafter presented to said witness for signature; that this certificate does not purport to acknowledge or verify the signature hereto of the deponent.

I do further certify that I am a disinterested person in this cause of action; that I am not a relative of the attorneys for any of the parties.

IN WITNESS WHEREOF, I have hereunto set my

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hand and affixed my notarial seal this 22nd day of May, 2023.

Notary Public - State of Indiana
My Commission Expires: August 10, 2026
Job No. 181267